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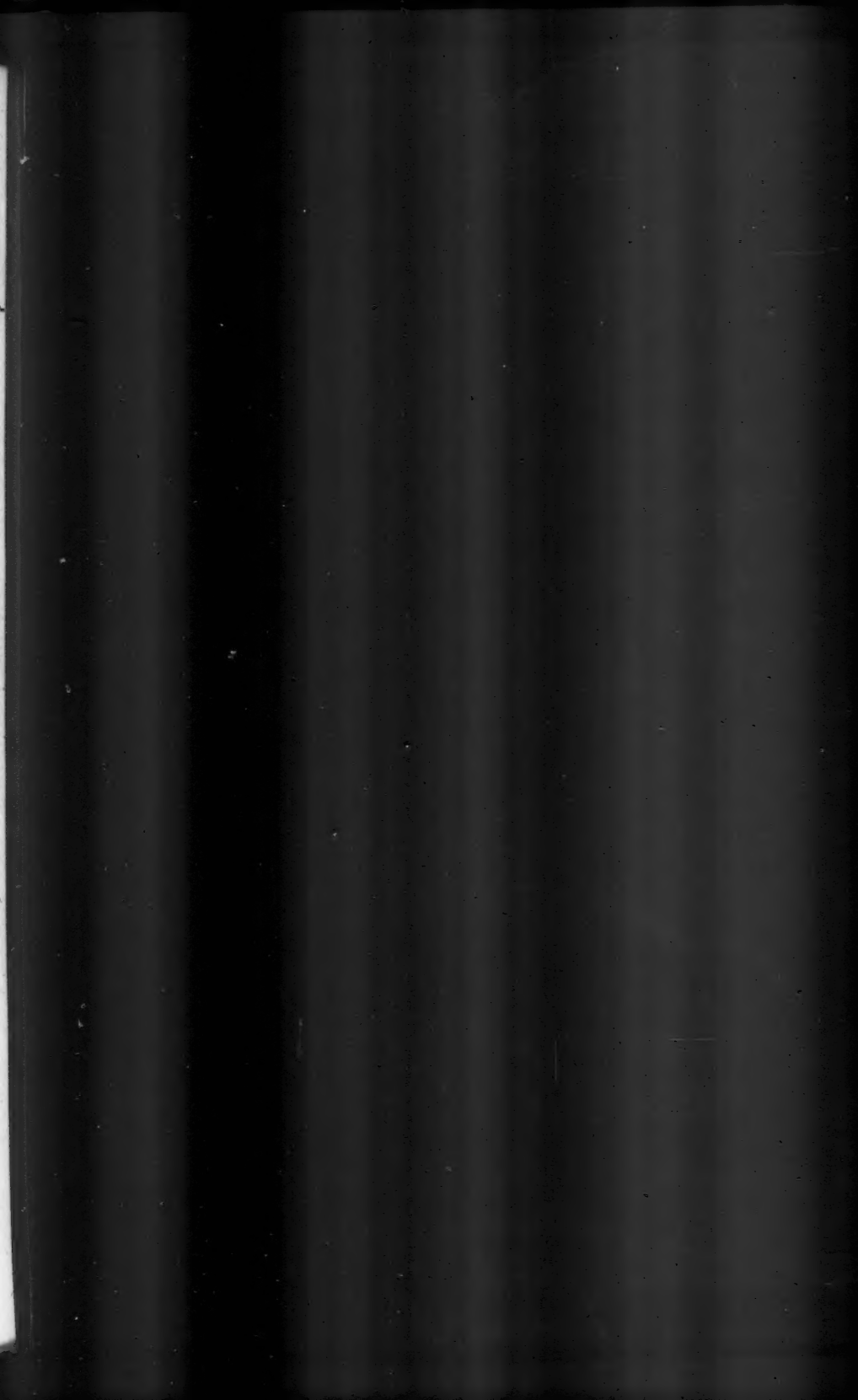
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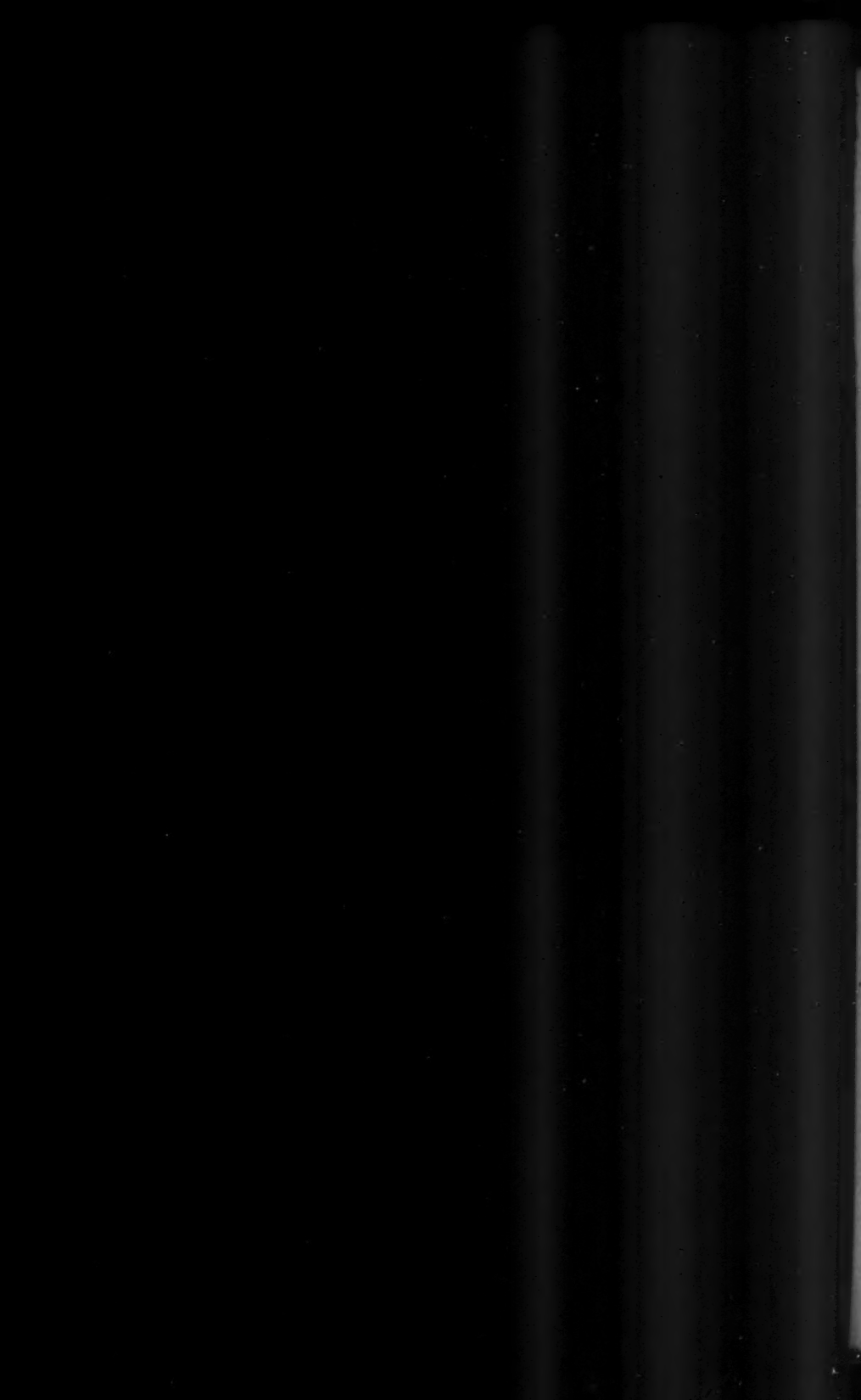
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THE
QUARTERLY JOURNAL
OF
ECONOMICS

MAY, 1915

AMERICAN GOLD AND SILVER PRODUCTION
IN THE FIRST HALF OF THE SIXTEENTH
CENTURY

SUMMARY

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I. INTRODUCTION

IN the Europe of the fourteenth and fifteenth centuries, the lack of precious metals to meet the requirements of an expanding mercantile activity came to be felt with increasing severity. The production of bullion

in the few mines worked in Europe was small and uncertain. A variety of circumstances, such as trade with Asia, the transforming of gold and silver into plate and jewels, and the accumulation of ecclesiastical treasure, had so far offset the output from the mines as probably to deplete the stock of money in circulation. It was the crying need of gold which fostered an increase of alchemy toward the end of the Middle Ages. It also prompted the voyages of Columbus and his companions; for one of the principal motives which led to the discovery of the New World was the conviction that by sailing westward might be found Marco Polo's golden land of Zipangu. The precious commodity was not obtained from Zipangu, but in the barbarian empires of Peru and Mexico. And from these distant regions, especially after 1545, a rich stream of precious metals flowed in ever larger quantities to the shores of Spain, and through Spain to the north of Europe. Some conception of the amount of bullion which crossed the seas in the first half-century after Columbus may contribute to an appreciation of the economic problems of that age.

Travellers and historians since Columbus' own time have exercised their imaginations upon the subject of American treasure. The extraordinary character of the remittances of gold, silver, pearls and emeralds gave contemporaries an exaggerated image of the revenues drawn by Spain from her new colonies. To many minds, apparently, they were the very foundation of Spain's political greatness. Early observers, it is true, were as a rule comparatively modest in their assertions; but in the seventeenth and eighteenth centuries Castilian fancy knew no bounds. Peter Martyr wrote in the second decade of the sixteenth century, before the conquests had extended to the mainland: "Solo de la Española se trae a España todos los años la suma de

shows
how
problems

400,000, y á veces de 500,000, ducados, se entiende que eso es, del quinto que viene para el Real Fisco, 80,000, 90,000 y 100,000 castellanos de oro, y á veces mas. . ."¹ The Venetian ambassador, Gaspar Contarini, in a letter of November, 1525, estimates the income of the crown from the Indies at about 100,000 ducats a year.² Another Venetian, Nicolas Tiepolo, in 1533 remarked that the treasure from America in one year amounted to 150,000 ducats, in another to not more than 50,000. In 1548 Mocenigo gives the entire returns for the crown as about 350,000 ducats,³ and three years later Marino Cavalli raises the figure to 400,000. In 1558 Michel Soriano, ambassador to Philip II at his accession, remembers that people spoke of "millions" of pesos; but in fact the king was receiving only between 400,000 and 500,000 ducats a year. Even in 1561 Andrea Badoero reckons the income from America at not more

¹ Decade III, lib. 8, cap. 3. Decade III was finished in October. 1516, and this chapter was probably written in that year.

The Spanish coins referred to in this paper are the maravedi, castellano, ducat, real, peso de minas and peso fuerte. The usual unit of calculation in Spain was the maravedi, represented in the sixteenth century by a billon coinage of the smallest value and one which was becoming progressively more debased. The castellano, the standard gold coin of Castile before 1497, was one-fiftieth of a maro of gold of a fineness of 23½ carats. As the Castilian maro weighed 230.0675 grams, the castellano contained 4.5534 grams of gold. Its legal value lay between 480 and 490 maravedis. It was superseded in 1497 by the ducat, in imitation of similar coins in Italy and Hungary. The ducat was of the same fineness as the castellano, but 65½ were minted from a maro of gold instead of 50. Its value was fixed at 375 maravedis, and it contained 3.495 grams of gold.

The common silver coin of Spain was the real, issued at a tale of 67 to the maro, and of a fineness of 67/72. As the legal value of a maro of silver after 1497 was 2,378 maravedis, the real was worth 34 maravedis.

The peso de minas was an imaginary unit of value employed in America before the establishment of royal mints. It represented, like the castellano, one-fiftieth of a maro of gold, but of a fineness of only about 22 carats, and its value was presumed to be 450 maravedis. It was equivalent, therefore, to about 4.18 grams of gold.

The peso fuerte was a silver coin of 272 maravedis or eight reals, minted in America after 1537. It became the famous Spanish dollar or "piece of eight" of trade, and in the sixteenth century contained 25.563 grams of silver. The final figures given in this paper are all expressed in pesos fuertes of eight reals.

See also the appendix to this article.

² Ranke, *Die Osmanen*, etc., 3d ed., 1857, p. 399. The actual income was very likely nearer 75,000 ducats.

³ *Ibidem*. The receipts of the Casa de Contratacion in that year were little over 108,000 ducats. The annual average for the decade was 148,000 ducats.

Real -
Common
Silver
coin

than half a million. Finally, the Spanish historian Gómara wrote in 1552 that in the sixty years the Spaniards took to discover, conquer and explore the American continent, the gold and silver they won thereby was not to be reckoned. It passed sixty million ducats.

Among seventeenth century writers, we find estimates less restrained and judicial. It is true that in 1618 Luis Valle de la Cerda (*Desempeño del Patrimonio Real*, etc., cap. xv) calculates in round figures the amount of gold and silver received from America during the first hundred years at more than 500 millions for the king and private individuals;¹ an estimate which was probably not far from the reality. In 1626, however, Pedro Fernandez Navarrete (*Conservacion de Monarquias*, etc., Disc. xxi) computed the returns up to his time at 1,536 millions;² while the worthy Dr. Sancho de Moncada (*Restoracion Politica*, etc., 1619, Disc. iii, cap. i) in deploring the scarcity of money already noticeable in the peninsula, accepts the statement that the registered income from America for the sixteenth century alone had been two billion pesos.³

It would be fruitless to quote the figures of other and later Spanish publicists. Their estimates for the sixteenth century were generally based upon the word of writers who preceded them, men who possessed little real information, and whose methods were as uncritical as their own. The earliest attempt at a scholarly discussion of the problem we owe to the renowned German scientist and traveler, Alexander von Humboldt. In the first years of the nineteenth century, Humboldt

¹ Colmeiro, *Econ. Polit.*, vol. ii, p. 431, note 2. The unit referred to is probably the ducat.

² *Ibidem*. Navarrete was copied by Gil Gonzales Davila (*Teatro de las Grandezas de la Villa de Madrid*, 1623, pp. 471-472); and later in the century probably by Solorzano Pereira (*De Indiarum Jure*, 1629-30, lib. v, cap. i), and by Nufes de Castro (*Solo Madrid es Corte*, 1660, lib. i, cap. 13).

³ *Ibidem*.

After
Humboldt

made his celebrated journey through Mexico and Spanish South America, and published the fruits of his observations in the *Essai Politique sur le Royaume de la Nouvelle Espagne*.¹ The importance of his researches concerning the gold and silver production of America up to 1800 need not be dwelt upon here. In the words of Adolf Soetbeer:

"Humboldt's Schätzungen zeichnen sich dadurch vor allen früheren Aufstellungen aus, dass sie nicht in Bausch und Bogen den gesammten Export ohne Unterscheidung der einzelnen Produktionsländer und Perioden veranschlagen, sondern die wichtigeren Minendistrikte und die verschiedenen Perioden speziell untersuchen . . . Kapitel xi. des 'Essai Politique' . . . hat hiermit eine wissenschaftliche Statistik der Edelmetalle eröffnet. Nach dem Erscheinen dieser wahrhaft grundlegenden Abhandlung sind alle früheren Aufstellungen, ohne auch nur noch den Versuch einer Verteidigung zu finden, aufgegeben worden. Die Humboldt'schen Schätzungen erlangten eine so zu sagen klassische Autorität. Die hieraus entnommenen ziffermässigen Angaben über die zu Anfang dieses Jahrhunderts Statt gehabten Verhältnisse der Gold- und Silber-Gewinnung in Amerika so wie über den Gesamtbetrag des bis dahin aus Amerika überhaupt in den Verkehr gebrachten Edelmetalls, sind unzählige Male entweder genau wiederholt, oder mit nur unwesentlichen Änderungen in spätere statistische Vorlagen, welche die Edelmetalle betreffen, übergegangen."²

In fact it was not until 1879, when Soetbeer, professor at the University of Göttingen, published his own still more thoro-going researches, that the conclusions of Humboldt were at all questioned. Humboldt confined his labors to the gold and silver production of the New World. Soetbeer extended his survey to include the eastern as well as the western hemisphere. He brought together all the scattered information of a trustworthy nature to be found in print, used Humboldt's sources and added others, employed a criticism

¹ 1st ed., Paris, 1811; 2d ed., 1827, referred to in this chapter.

² Soetbeer, Adolf, *Edelmetall-Produktion und Werthverhältnisse zwischen Gold und Silber seit der Entdeckung Amerikas bis zur Gegenwart*. Gotha, 1879, p. 3.

more searching than his predecessor's, and produced what seemed to be, with some few possible corrections and additions, the final word upon the subject. So it was regarded by his contemporary, Lexis, who in the following year, 1880, suggested some emendations, and materially reduced a few of the American figures for the sixteenth century.¹

Humboldt's table of the importation of gold and silver from America before the year 1600, is as follows: ²

| PERIOD | ANNUAL AVERAGE | HISTORICAL REMARKS |
|-----------|----------------|--|
| 1492-1500 | 250,000 pesos | Discovery of the Antilles — gold-washings of Cibao — expedition of Alonso Niño to the coasts of Paria — voyage of Cabral — loss of Bobadilla's fleet. |
| 1500-1545 | 3,000,000 " | Exploitation of Mexican mines: Tasco, Zultepeque, Pachuca; Peruvian mines: Porco, Carangas, Andacava, Oruro, Carabaya, La Pas — booty of Mexico, Caxamalca, Cuzco — conquest of New Granada. |
| 1545-1600 | 11,000,000 " | Mines of Zacatecas and Guanajuato in Mexico — Cerro de Potosí in Peru — tranquil possession of Chili and interior of Mexico. |

With it may be compared Soetbeer's conclusions for the entire production of precious metals in America in the sixteenth century:

| PERIOD | ANNUAL AVERAGE |
|-----------------|----------------|
| 1493-1500 | 485,000 pesos |
| 1521-1544 | 2,966,000 " |
| 1545-1560 | 12,945,000 " |
| 1561-1580 | 12,003,000 " |
| 1581-1600 | 17,284,000 " |

The total production till 1600 he therefore reckoned at about 865 million pesos.³ Lexis' figure for the same period is only 795 millions.⁴

¹ *Jahrbücher für Nationalökonomie und Statistik*, vol. xxxiv (1880), pp. 361 ff.

² *Emmi Polit.*, vol. iii, p. 428.

³ *Op. cit.*, pp. 107-108.

⁴ *Op. cit.*, p. 402.

Since 1880 no one has attempted to review or improve upon the conclusions of these two German scholars. Their calculations have been accepted with the same degree of faith as were those of Humboldt before them. Indeed they had exhausted all the printed and readily accessible sources of information. The only other possible recourse would have been to materials in manuscript, and such materials, even if their existence was known, were far away and had never been examined.

The chief depository of Spanish colonial state papers is in southern Spain, in the city of Seville, — the Archivo de Indias. In it are preserved not only the records of the Casa de Contratacion, but also the original ledgers of the royal treasurers of the various colonies from the very first days of the exploration and conquest. In Seville may be seen the accounts for New Spain (Mexico), dating from September, 1521, only a month after the storming of the ancient Mexican capital. There are the ledgers of the treasurers of Peru from April, 1531, when the royal officials joined Pizarro at the seaport of Tumbez before the historic march to Caxamalca. And there too may be found the records — less complete, it is true, but just as instructive — of the treasurers of the realm of New Granada, of Guatemala, and of the West Indian islands.

From these documents one should be able to secure a juster idea, on the one hand of the quantities of gold and silver produced in the New World, and on the other of the extent of the revenues drawn by the Spanish crown from its American possessions. For the former we must depend upon what we can learn of the amount of the "quinto," or one-fifth of all the produce of the mines, reserved to the crown (sometimes, in certain localities, a "diezmo," or one-tenth); for the latter we have the official figures of the receipts from year to year, of the

by Cortés

Casa de Contratacion, from the foundation of that institution in 1503.

If the papers of the colonial treasurers were as full and carefully itemized for the earliest as they are for later years, we should possess a complete record of all the bullion brought to the royal assay offices to be registered, stamped, and taxed. There are, unfortunately, gaps and omissions in some of the most critical places. The financial papers of the Casa de Contratacion, on the contrary, have come down to us entire. The chief difficulty for the investigator is their voluminousness. The returns from the Indies were classified and detailed with scrupulous care. To analyze them completely so as to discover the time and place of each shipment, would require literally years of labor. Yet only in this way could be ascertained the proportionate amounts contributed to the royal treasury by each colony. I had to be content with figures representing the total yearly receipts, and with a careful examination of only the more important remittances. Even the data so secured enable one to substitute genuine and definite figures for the more or less capricious estimates based upon chance statements of contemporary chroniclers and travelers.¹

II. MEXICO

Mexico was the first of the great gold and silver regions of the American continent to be tapped by the Spaniards, and it remains in the twentieth century, as regards these commodities, the most productive of all

¹ It is in order here to mention a pamphlet published in 1904 by Señor F. de Laiglesia (Real Academia de la Historia): "Los Caudales de Indias en la primera mitad del siglo xvi." Laiglesia obtained his figures from the same records of the Casa de Contratacion to which I have referred. The inaccuracies in the pamphlet are so numerous that to attempt to enumerate them would be profitless. None of his figures or statements can be accepted without verification.

the countries of Spanish America. Notices of the wealth found there by the conquerors, as they appear in the letters of Cortez, and in the narrative of Bernal Diaz del Castillo, have been carefully collected and scrutinized by Humboldt and Soetbeer. According to Cortez' own testimony, the tribute required of Montezuma and his subjects after the entry of the Spaniards into the capital, and the enforced restraint of the Aztec chieftain, amounted to 162,000 pesos of gold and over 500 marcs of silver.¹ The booty captured when the city fell the second time was little over 130,000 pesos, the rest of the plunder being in the form of slaves, embroidered cotton cloths, plumes, jewels, etc.² Bernal Diaz' figures are higher but less reliable. He puts the tribute of Montezuma at 600,000 pesos in gold, and the booty taken with the city at 380,000 pesos.³ The treasure that survived the first rout of the Spaniards, and the royal share of the spoils gained in the final capture of the capital, together with private remittances from Cortez and his followers, were sent to Spain in three caravels in charge of Alonso de Avila and Antonio de Quinofies; but the famous French corsair, Jean Florin, captured two of the vessels beyond the Azores and diverted the treasure to France.⁴ The caravels carried, besides the unvalued jewels and objets d'art, 31,260 pesos in fine gold and 239 pesos baser gold for the

*enforced
tribute
from
Montezuma*

¹ Cortez' 2d letter, October 30, 1520; Gómara, lib. ii, cap. 46. Before the tribute was melted down, Cortez set aside as a special gift to the emperor, jewels, gold and silver vases, etc., of unusual workmanship, to the value of over 100,000 ducats. Bernal Diaz complains that at least two-thirds of such booty was reserved for the crown, the soldiers receiving only a paltry remainder.

² Cortez' 3d letter, May 15, 1522. His figures are corroborated by the accounts of the first royal treasurer, Julian de Alderete. The royal quinto of the cotton, cacao, slaves, and similar booty captured in the Conquest was valued at 9,440 pesos de oro. (A. de I., 4 — 1 — 1/19, ramo 1.)

³ Hist. Verdadera, caps. 104 and 157.

⁴ According to Gómara, Florin at the same time seized another vessel returning from the Indies with a cargo of 62,000 ducats in gold, 600 marcs of pearls and 2,000 arrobas of sugar.

king, and perhaps twice as much on the account of private individuals.¹ When the news of the loss reached Mexico, Cortez, partly to reimburse the emperor for this miscarriage, partly it may be as a thank offering for his appointment to the governorship of New Spain, hastened to gather all the gold and silver he could find for a second gift to his sovereign. In 1524, 60,000 pesos in gold, the product of the quinto, and a silver cannon weighing 2,450 pounds, were forwarded to Seville in the care of the treasurer, Diego de Soto.²

From the "Coleccion de documentos ineditos, etc." and from the Ternaux-Compans collection,³ Soetbeer assembled what evidence he could find bearing upon the amount of precious metals in Mexico after the conquest. Both he and Lexis, however, base their estimates of the gold and silver production of the country in the first half-century upon a single table of figures published by Ternaux-Compans, entitled: "Envois d'or et d'argent faits par les gouverneurs et vicerois du Mexique . . . jusqu'à l'année, 1587, etc."⁴ This table, which Soetbeer reprints in full, appeared in a French translation without any indication of its source. The original was probably among the papers of the historian Muñoz, to which Ternaux-Compans had access. A Spanish copy, evidently emanating from the same source but

¹ Colecc. de doc., 1st series, vol. xii, p. 352; "Relacion del oro plata é joyas é otras cosas que los procuradores de Nueva España llevan á Su Magestad. Cuyoacan, 19 Mayo, 1522." Cf. also the register of the cargo of one of these caravels, the *Sta. Maria de la Rabida* (ibidem, p. 253). Bernal Dias says (cap. 159) that the vessels carried 88,000 pesos in gold lingots besides the treasures of Montezuma's "guardarropa."

The figures printed by Soetbeer at the head of column 2, p. 50 (op. cit.), are given an entirely mistaken meaning. They represent, not the quinto shipped to the emperor in 1522, but the receipts of Alderete as treasurer up to that time.

² Cortez' 4th letter, October 15, 1524; Gómara, lib. ii, cap. 64; Bernal Dias, caps. 159 and 170. Soetbeer calls the cannon a "Gefäss."

³ Ternaux-Compans, H., *Recueil des voyages . . . pour servir à l'histoire de la découverte de l'Amérique*, 20 vols. Paris, 1837-41. Vols. x and xvi, "Documents relatifs au Mexique."

⁴ Ibidem, vol. x, p. 451.

carrying the table down to the year 1601, may be seen in the British Museum.¹

Soetbeer seems to have assumed that the figures of the table stood for the ordinary "pesos fuertes" of 8 reals, worth 272 maravedis. Professor Lexis, however, interpreted them as representing "pesos de minas" of 450 maravedis or $13\frac{1}{4}$ reals, and made his calculations upon that basis. The fact that the smaller units were "tomines" and "granos" lent color to his conjecture. On the other hand, the document distinctly stated that the various kinds of pesos were reduced to "pesos d'or communs." Moreover a comparison of the figures with those given by Cortez in his letters, and with others found in the "Colecc. de doc. ined.," would have raised the suspicion that the smaller peso was meant. The sum given for 1522 is really the treasure carried by the two proctors, Avila and Quiñones, reduced to pesos of 8 reals. The 99,264 pesos, 5 tom., 8 gr. set down for 1524, is exactly the 60,000 pesos of gold mentioned by Cortez as sent to Spain with the silver cannon in that year. Lastly, figures in the ledgers of the treasurers of New Spain entirely confirm this conclusion. The first premise of Professor Lexis' calculations was therefore a mistaken one.²

Professor Lexis also assumes that the sums sent to Spain on the royal account represented in the long run the whole of the quinto of the produce of the mines. That would be reserved with especial care for the crown, the expense of administration in the Indies being met by other revenues. The figures of the table, therefore, multiplied by five or ten as the case might be, would give in round numbers the entire registered pro-

¹ Add. Mss. 13,964, fol. 196 ff.

² Lexis, *op. cit.*, p. 380. For a discussion of units of value in Mexico after the conquest, see appendix to this paper.

1 peso =
8 reals =
272 maravedis

duction for those years. Soetbeer, however, introduces other considerations: (1) a part of the quinto was often expended in America; (2) the remittances to Spain included revenues in addition to the quinto; (3) 5 per cent was added to his silver and 10 per cent to his gold figures to represent the bullion unregistered. For these reasons, the estimates he arrives at are somewhat less than those based simply on the data given in the table.

The results obtained by these two scholars are the following: ¹

| | 1522-44 | 1545-60 | Totals |
|--------------|-----------|------------|------------|
| Soetbeer: | | | |
| Gold | 3,110,750 | 1,612,800 | 4,723,550 |
| Silver | 3,086,600 | 9,433,600 | 12,520,200 |
| Lexis: | | | |
| Gold | 8,900,000 | 4,800,000 | 13,700,000 |
| Silver | 3,180,000 | 13,720,000 | 16,900,000 |

My own estimates for the first forty years after the conquest are based entirely upon the accounts preserved in Seville of the early treasurers of the colony. In those for the first decade the exact amount of the quinto is not always clearly indicated. Inclusive sums are given which cover not only receipts from this source, but other items such as tribute of the Indians, customs dues and judicial fines. I have consequently been compelled, in some cases, to make an approximation based upon a comparison with the figures for other years.

The factor I have used to represent the "royal fifth" during this decade differs from that accepted by Soetbeer and Lexis. According to a remark dropped by the auditor Salmeron in a letter to the emperor of August

¹ The proportionate amounts assigned for gold and silver were purely arbitrary assumptions. No real data were at hand.

Humboldt's figures for Mexico were:

| | |
|-----------|-------------------------------|
| 1521-1548 | 40,500,000 pesos of 8 reals. |
| 1549-1600 | 104,000,000 pesos of 8 reals. |

To these estimates he added one-seventh, or over 14 per cent, to represent bullion unregistered. His results were enormously reduced by both Soetbeer and Lexis.

14, 1531, the crown in the years 1523-29 had collected only one-tenth, thereafter presumably returning to the full legal quinto.¹ But it is evident from the treasury papers that this "diezmo" was not universal. On some bullion one-fifth was paid; on others one-eighth and one-ninth. I have taken one-eighth as a general average.

Apparently by a cedula of September 17, 1548, the quinto on silver was again reduced to a diezmo for six years, but the rule applied only to certain districts. The ordinance was several times renewed till 1572, and then became permanent. Not till 1723 was there a general law for all Mexico. The tax on gold continued to be one-fifth till 1572, when it too was reduced to one-tenth.² For the silver production of Mexico in the years 1548-60, therefore, I have again used the factor 8.

Another consideration to be noted is the "derecho del fundidor ensayador y marcador." In these American records it is clear that from the very beginning the crown charged 1 per cent for the trouble of smelting, assaying and stamping the bullion brought to the assay offices. This 1 per cent was first deducted from the bullion, and then the quinto.³ Charles V in 1552 raised the tax to 1½ per cent;⁴ but 1 per cent continued to be levied in Mexico for some years, perhaps till 1578 when another cedula repeating the order of 1552 was issued. The new rule was not put into force at Potosí till 1585.⁵

¹ Ternaux-Compans, *op. cit.*, vol. xvi, p. 179.

² Gallardo Fernandes, F., *Rentas de la corona de España*, vol. vi, pp. 1-19; Duport, St. Clair, *De la production des metaux precieux au Mexique*, Paris, 1843, p. 161. The original cédulas bearing upon this point I have not been able to find, but their import is confirmed by the treasury papers. The general ordinance was not extended to Peru till 1735.

³ The rule was embodied in a general decree by Philip II in 1579. (*Recop.*, lib. viii, tit. 10, ley 19.)

⁴ *Recop.*, lib. iv, tit. 22, ley 13.

⁵ *Add. Mss.* 13,976, fol. 405 ff. In 1522, the emperor nominated his secretary, Francisco de los Cobos, "fundidor, ensayador y marcador mayor" for all New Spain.

As the combined charge amounted to only 20½ per cent, I have not taken this tax into account in my calculations.

Finally, it is evident from the treasury papers that part of the tribute of the Indians was in the form of gold-dust. Such tribute paid to private "encomenderos" was subject to the "royal fifth,"¹ and is included in the figures for the quinto. Revenue from this source on the crown estates, however, naturally represented, not one-fifth, but the entire yield of the gold-washings. To cover this production I have added to my results, for the first period 10 per cent, for the second 2½ per cent, of the tribute of the Indians.²

The conclusions arrived at are the following:

| | 1521-44 | 1545-60 | Totals |
|--------------|-----------|------------|------------|
| Gold | 5,348,900 | 343,670 | 5,692,570 |
| Silver | 4,130,170 | 22,467,110 | 26,597,280 |

The entire output of gold and silver had a value of 32,289,850 pesos of 8 reals. Professor Lexis' figure was 30,600,000 pesos; that of Soetbeer, 17,243,750 pesos.

The final result achieved differs little from that of Lexis. This, however, is only an accident, as his estimates are based on a mistaken reading of the Ternaux-Compans table. Had he interpreted the table aright, his totals would have been under twenty millions. His surmise, therefore, that the remittances from New Spain

In 1534 the patent was extended to include Peru. Santa Marta was added in 1535, and the region of Central America in 1538. As "fundidor mayor" Cobos enjoyed the income from the 1 per cent collected for the crown, and after his death the tax continued to be called, the "Cobos." In 1552 an annuity of 3,000,000 maravedis on the produce of this tax was granted to his son and widow. (A. de I., 2—1—220/16; 4—1—1/19, ramo 2; 139—1—7, lib. 13, fol. 64; Patr. 2—5—1, no. 2, ramos 16, 17; Aud. de Lima, 109—7—1. Restrepo, V., Estudio sobre las minas . . . de Colombia. 2d ed. Bogotá, 1888, p. 207.

¹ Recop., lib. viii, tit. 10, leyes 6, 7.

² I have found no evidence that there were any mines in Mexico exploited on the account of the crown. Such is also the testimony of Humboldt.

gold - dust -
Pure or
Indian
mineral

Having
says Lexis
estimates are
erroneous

to Seville represented on an average all of the quinto reserved to the Crown proves to be incorrect.

Furthermore, the proportionate amounts assigned by Lexis for gold and silver were wide of the mark. He far over-estimated the production of gold, and underestimated that of silver. Soetbeer's approximation for gold was much closer to the truth. Both were unaware how great was the decline in the yield of gold within twenty-five years after the coming of the Spaniards. The production of silver, on the other hand, began earlier and made greater strides than either imagined. The famous silver mines of Zacatecas were not discovered till 1548. Ten years later were opened the deposits at Guanajuato, the richest the world has ever known.¹ But even before 1548 the exploitation of less celebrated mines had vastly augmented the metallic output of the country. The average annual yield in 1540-44 was over three times that of the decade immediately preceding, and was itself almost doubled by the yield of the years 1544-48.

An idea of the variations in the production of gold and silver may be gained from the following table, which summarizes my own conclusions:

AVERAGE ANNUAL PRODUCTION (BECKONED IN MARAVEDIS)

| Period | Gold | Silver |
|-----------------------|------------|-------------|
| Aug., 1524-Nov., 1531 | 54,945,000 | 2,335,000 |
| Nov., 1531-July, 1539 | 72,143,000 | 47,950,000 |
| Aug., 1539-May, 1544 | 40,890,000 | 152,050,000 |
| June, 1544-Dec., 1549 | 13,495,000 | 269,140,000 |
| Jan., 1550-Mar., 1553 | 4,600,000 | 405,100,000 |
| Mar., 1553-Aug., 1555 | 2,560,000 | 507,800,000 |
| Aug., 1555-Jan., 1560 | 1,100,000 | 467,475,000 |

¹ Humboldt, *Essai Polit.*, liv. iv, ch. xi.

III. PERU

When we investigate the gold and silver production of the vice-royalty of Peru and its dependencies, the difference between the figures obtained in Seville and those of Soetbeer and Lexis becomes more striking. The two German scholars made separate estimates for Peru proper (the confines of the present-day republic) and for each of the outlying regions of Upper Peru (Bolivia) and Chili. But in the sixteenth century all three were part of the same vice-royalty, and seem to have been in financial administration dependent upon the royal treasurer at Lima. There are no individual accounts in Seville for Upper Peru or Chili; and in the reports of the precious metals brought back by the great fleets, the gold and silver coming from the Pacific coast of South America is always entered under the rubric "Peru," and not itemized separately for the three districts. The presumption, therefore, is that the receipts of the "Hacienda Real" in Upper Peru and Chili — or at least the quinto — entered into the accounts of the royal treasurer at Lima. And this presumption is borne out by an examination of the accounts themselves.

It is impossible with any assurance of accuracy however, to separate in these ledgers the receipts coming from the three regions. The silver of Potosí and the gold from the vicinity of Cuzco¹ passed through the city of Arequipa for shipment up the coast to Lima; and are noted in the treasurers' books merely as coming via Arequipa, or as "oro y plata que se trae de fuera desta ciudad." It will be necessary, therefore, to compare the results from the figures in the Sevillian archives with the

¹ Doubtless, too, the gold which the conquistadores may have found in Chili.

Hacienda Real
in
Peru

figures of Soetbeer and of Lexis for Peru, Upper Peru and Chili combined.

For Peru in the sixteenth century, Soetbeer and Lexis had for guidance only the reports of booty secured from the natives by the initial conquerors, and the scattered and often untrustworthy figures of travelers and historians like Cieza de Leon, Zarate, Gómara and Herrera. Their conclusions — which at most could be merest guess-work — differed considerably, Lexis increasing Soetbeer's figures for gold-production and greatly decreasing those for silver. Their results in tabular form are as follows:¹

| PERU | | | |
|------------|------------|------------|------------|
| | 1533-44 | 1545-60 | Totals |
| Soetbeer: | | | |
| Gold | 3,318,000 | 1,896,000 | 5,214,000 |
| Silver ... | 13,080,000 | 30,720,000 | 43,800,000 |
| Lexis: | | | |
| Gold | 3,903,600 | 5,204,800 | 9,108,400 |
| Silver ... | 5,294,000 | 7,059,000 | 12,353,000 |

For the gold-production of Chili there were even less available data than in the case of Peru, and the figures of Soetbeer and Lexis are consequently even more problematical. Lexis accepts the approximation of Soetbeer, which for the years 1545-60, amounted to 12,800,000 pesos.² We have no knowledge of any production of silver in Chili during this period.

For Upper Peru, and especially for the mines of Potosí, more information of a reasonably reliable sort was to be had. There was the testimony of Cieza de Leon, who visited Potosí in 1549, to the effect that the

¹ Soetbeer, *op. cit.*, p. 69; Lexis, *op. cit.*, pp. 397-399. The figures for gold-production are based on the currency standard in Spain in the sixteenth century, which implied a ratio of gold to silver of 1-10.11. The original figures in the works cited are based on the standard of 1879: 1-15.5. I have made the same correction for the gold-production of Chili and Upper Peru.

² Soetbeer, *op. cit.*, p. 82; Lexis, *op. cit.*, p. 400.

quinto of the silver mined in that year amounted to about 120,000 pesos de minas a month (or $1\frac{1}{2}$ millions a year).¹ It was known that over a million ducats were brought to Spain from Peru by the great Jesuit statesman Gasca in 1550, after he had extirpated the unholy brood of the Pizarros — a sum which presumably represented all the funds in the royal chests gathered in the previous four or five years and surviving the chaos of the civil wars. José de Acosta relates that when he was in Peru in 1574, the viceroy Toledo had an estimate prepared of the sums from which the quinto had been collected at Potosí since the opening of the mines in 1545. The report was based for the earliest years on the memory of surviving officials, the books having been lost; and the estimated figure was 76 million pesos de minas.² Finally, there were the reports made to the Spanish crown in 1784 and 1802 by the royal treasurer at Potosí, D. Lamberto de Sierra, of the royalties collected each year since 1556. The earlier of these was used by Humboldt without his being aware, apparently, of its original source. Soetbeer quotes it from Humboldt and also refers to the later report of 1802. Lexis for the first time indicates their common origin. Sierra, in his second report, estimates the average annual yield of the quinto during the first eleven years (1545–55) at 443,000 pesos.

All of these data were used in turn by Humboldt, Soetbeer and Lexis, but with somewhat different results. Humboldt calculated that the average yearly return of the quinto at Potosí during the eleven problematical years was 2,300,000 pesos of 8 reals; which presupposes an annual silver production of 11,500,000 pesos, and a total registered production for the eleven

¹ *Cronica del Peru*, cap. cviii.

² *Hist. Nat. y Moral de las Indias*, lib. iv, cap. 7.

years of 127,500,000 pesos.¹ As he assumed that a fifth of the metal extracted was never registered and taxed, another 32 millions must be added to cover this fraud.

Soetbeer, and Lexis after him, believed that Humboldt's figures were greatly exaggerated. Soetbeer evidently used as the basis of his calculations the estimate of Sierra. Presuming that Sierra meant pesos de minas of 13½ reals, and that in this early period at least half the silver mined was not registered, Soetbeer reckoned the average annual production of silver in Potosí and the rest of Upper Peru at 7,820,000 pesos of 8 reals, the total production for the eleven years at 86 millions.

Lexis, however, makes it clear that Sierra meant pesos fuertes,² and also throws doubts upon the trustworthiness of Sierra's estimate. He prefers to base his computations on the figures secured by Toledo in 1574, as related by Acosta. Assuming that the 76 millions represents the total amount of silver produced from 1545 to 1574,³ and using the official figures furnished by Sierra for the quinto in the years 1556-74, he concludes that the total amount extracted between 1545 and 1555 was about 54 million pesos de minas or about 89 million pesos of 8 reals. This result is so close to the approximation of Soetbeer, 86 millions — tho obtained by so entirely different a method — that Lexis accepts Soetbeer's figure.

For the period 1556-60, Soetbeer and Lexis both make use of the official figures supplied by the treasurer Sierra. As Soetbeer, however, reads Sierra's table in

¹ Humboldt is silent regarding the possible gold-production of Upper Peru.

² The conclusion of Lexis is borne out by a seventeenth century document in the British Museum (Add. Mss. 13,976, fol. 405), which covers the same ground as does Sierra's report up to the year 1640, but with results reckoned in pesos de minas. It is referred to in the text as Echavarria's table.

³ Acosta gives this sum as representing only the silver registered.

pesos de minas, and Lexis in pesos fuertes, and as Soetbeer adds 100 per cent to represent the silver unregistered, and Lexis adds only 50 per cent, the results differ considerably. To these five years Soetbeer gives a total silver production of 34,110,000 pesos fuertes; Lexis arrives at the figure 16,000,000 pesos fuertes.

Neither writer possessed any data regarding the production of gold in Upper Peru in this period, and altho each suggests approximate figures, they are obviously of the most doubtful nature. Soetbeer presumes an annual output of 1,000 kilograms, worth at the sixteenth century ratio, 6,330,000 pesos. Lexis believes the gold production between 1545 and 1800 to have been about 80,000 kilos; which gives us 1,978,000 pesos as the total for the years 1545-60.

The results may be summarized in the following table:

| UPPER PERU | | | |
|------------|------------|------------|-------------|
| Silver: | 1545-55 | 1556-60 | Totals |
| Soetbeer | 86,000,000 | 34,110,000 | 120,110,000 |
| Lexis | 86,000,000 | 16,000,000 | 102,000,000 |
| Gold: | 1545-60 | | |
| Soetbeer | 6,330,000 | | |
| Lexis | 1,978,000 | | |

My own conclusions rest again entirely upon an examination of the ledgers of the royal treasurers of Peru now in the Sevillian archives. The first treasurer, Alonso Riguelme, began the exercise of his office in April, 1531, when Pizarro and his band were preparing to leave Tumbez for the uplands of the interior. His stewardship came to an end only with his death in May, 1548. His receipts include, therefore, the royal share of the booty at Caxamalca, Cuzco, etc.,¹ the quinto from

¹ The various sixteenth century accounts of the ransom of Atahualpa have been ably reviewed and criticized by Soetbeer and Lexis. They need not again be repeated. Cf. Lexis, *op. cit.*, pp. 392-393; Soetbeer, *op. cit.*, pp. 65-66.

the mines of Peru during the first fifteen years of the colony's existence, and the royal income from Potosí in the three years immediately following the discovery of the famous silver deposits there. The exact amounts accruing from each of these three sources are not made clear, nor is the gold and silver always separated in the accounts. Doubtless during the confusion of the first decade, the books were not kept with the scrupulous regard for detail which is evident in later records. Whereas the tribute of the Indians, judicial fines, cruzada, etc., are entered separately, there are also great sums of gold and silver grouped together as coming from no particular source. The latter, I believe, we may confidently assume represent the royal share of the plunder and of the output of the mines. Only the quinto from Peru for the years 1544 to 1548 is specifically itemized. These sums total 1,183,306 pesos de minas of gold and silver, and 169,119 marcs of silver in bars. Reducing the figures to pesos of 8 reals, we have as the total for the quinto during the years 1531-48, — 3,331,770 pesos, which presumes the entire registered amount of gold and silver to have been about 16,658,850 pesos.

During the decade 1548-57, six treasurers filled the office left vacant by Riguelme's death. In their accounts the quinto collected within their immediate jurisdiction of Peru, and the receipts from the neighborhoods of Cuzco and Potosí, are kept separate. So also are the figures for gold and silver from 1550 onwards. But it is impossible to separate the figures for Potosí from those for Cuzco, except by supposing that all the gold came from Cuzco and all the silver from Potosí. Moreover, there are gaps in the accounts to be filled up. I could find no itemized receipts for the period January, 1551-May, 1552, and the items for 1550 are obviously incomplete.

The results I secured are the following. The quinto collected in Peru from May, 1548 to December, 1550, and from May, 1552 to December, 1557, was 372,968 pesos de minas of gold and assayed silver, and 34,104 pesos of current silver.¹ For the months from January, 1551 to May, 1552 no figures are available, but from an examination of the accounts immediately before and after, 65,000 pesos de minas has been assumed as the income for this period.

The receipts from Cuzco and Potosí from May, 1552 to December, 1557 were 1,700,504 pesos de minas of gold and assayed silver, 21,256 pesos of current silver, 3,299 marcs of silver in bars, and $7\frac{1}{2}$ marcs of base silver. For the four years from May, 1548 to May, 1552, the data are insufficient. I therefore sought an average for these years from other sources. The annual gold production, by reference to figures after 1552, I fixed at about 30,000 pesos de minas or 50,000 pesos of 8 reals. The silver from Potosí I reckoned at about 284,000 pesos de minas or 470,000 pesos of 8 reals and for the following reasons. It is quite likely that the large single item of bar silver in Riguelme's accounts, 169,119 marcs, represents the silver that had come from the royal assay office at Potosí. If this be so, it implies an average annual yield of 276,850 pesos de minas or 458,000 pesos of 8 reals. This figure is very close to Sierra's estimate of 443,000 pesos; and Sierra, in spite of the doubts of Dr. Lexis, probably had access to more information than any of those who have come after. In 1552-57 the receipts from Potosí seem to have amounted to about 1,566,000 pesos de minas, or 284,000 a year.² In Echavarria's table the figures for 1556 and 1557 are

¹ Current silver I have reckoned at a discount of about $12\frac{1}{2}$ per cent.

² I have taken the "plata ensayada" as representing the quinto from Potosí, and seem justified by the result.

278,000 and 289,000 respectively. I consequently fixed the annual average for the years 1548-52 at 284,000. The entire quinto from Cuzco and Potosí during these four years probably yielded, therefore, about 2,080,000 pesos fuertes of 8 reals.

On the basis of the above figures the product of the quinto in the vice-royalty of Peru during the years 1548-57 was in round numbers 5,360,000 pesos fuertes, and the entire registered output of the precious metals was 26,800,000.

As my original intention was to confine myself to the reign of Charles V, I did not carry the examination of the records beyond 1557. So I am forced to make use of an approximate figure for the next three years, 1558-60. The average annual receipts from the sources under consideration, in the twenty-nine months from July, 1555 to December, 1557, were 784,750 pesos of 8 reals. Correcting this figure by reference to the quinto collected in Potosí during 1558-60, I accepted 700,000 pesos fuertes as the likeliest approximate annual income from all the provinces of the vice-royalty. The total registered output for the three years would then be 10,500,000 pesos.

The preceding results may be tabulated as follows:

| | QUINTO | GOLD AND SILVER REGISTERED |
|---------------|------------|-------------------------------|
| 1531-48 | 3,331,770 | 16,658,850 |
| 1548-57 | 5,360,000 | 26,800,000 |
| 1558-60 | 2,100,000 | 10,500,000 |
| Totals | 10,791,770 | 53,958,850 |

To attempt an estimate of the entire amount of the precious metals extracted, one must take into account the factor of fraud. It is the testimony of all writers from Cieza de Leon onwards, that large quantities of the gold and silver produced at the mines, especially at Potosí, never reached the government assay office, but were smuggled away to avoid payment of the royal fifth.

*factor of
fraud*

At Potosí before 1560, Soetbeer reckoned this fraud to have embraced a half of the entire output. Lexis would reduce it to one-third. What it amounted to in Peru, neither has attempted to estimate. Yet that it was just as apt to be carried on there as in Upper Peru is obvious, especially in view of the disorganized state of the country during the first twenty-five years of its history.

Any determination of the actual extent of such fraud is in the very nature of the case impossible. The factor employed to represent it can be only the merest conjecture. The criticism of Lexis, that Soetbeer's figure is too high, seems on the whole to be a just one. His own estimate is probably nearer the truth. Yet, during the first few years after the discovery of the silver deposits in the "Cerro," the amount of treasure unregistered must have been very great. It may easily have been 50 per cent or more. I should, therefore, make the following additions to the figures tabulated above.

The whole registered output for the years 1531-48, 16,658,850 pesos, seems to represent about 9,788,000 pesos from Peru and the rest (the 169,119 marcs) from Potosí. The Peruvian figure may be considered as two-thirds of the total output of the mines, the figure for Potosí as only one-half. On this basis, the entire production of the vice-royalty in these years would be about 28,400,000 pesos.

For the years succeeding 1548, I have accepted Lexis' factor of $3/2$. The total figure for this period may then be fixed at about 55,950,000 pesos, and the entire production of the vice-royalty from the conquest to 1560, at 84,350,000.

To discover the proportionate amount of this output contributed by Chili is impossible from the data supplied in the treasury records. An estimate may be

hazarded, however, of the sum extracted from Potosí, and also of the relative amounts of gold and silver in the vice-royalty.

The figures taken to represent the quinto of Potosí from 1545 to 1557 have already been indicated. For the last three years, 1558-60, the official returns of Echavarría have been used. The results are as follows:

| QUINTO OF POTOSÍ | |
|------------------|---|
| 1545-48 | 830,565 pesos de minas (160,119 marcos) |
| 1548-52 | 1,136,000 " " " |
| 1552-57 | 1,566,000 " " " |
| 1558-60 | 708,945 " " " |
| Totals | 4,241,510 " " " |
| | or |
| | 7,017,200 " of 8 reals |

If we accept these figures and take into account the probable fraud, the total production of Potosí before 1560 must have been about 56 millions.¹ Soetbeer arrived at 120 millions, Lexis at 102 millions.

If Potosí produced 56 millions, 28 millions remain as the production of Peru and Chili between 1533 and 1560. Soetbeer's approximation is nearly 62 millions, that of Lexis about 34 millions. Very likely both writers have vastly exaggerated the gold production of Chili during these pioneer years.

According to the ledgers of the royal treasurers, the gold quinto between May, 1552 and December, 1557, amounted to 188,969 pesos de minas. This presupposes an average annual production, including the amounts unregistered, of about 420,000 pesos fuertes. Lexis assumed for the period 1545-60 an annual output in Peru of about 325,300, and in Upper Peru of about 123,500 pesos. Soetbeer's figures were 118,500 for Peru, and 395,000 for Upper Peru.

¹ About two-thirds of the entire output of the vice-royalty from 1533, and perhaps 80 per cent of the production after 1545.

It seems, therefore, in conclusion, that both Soetbeer and Lexis greatly over-estimated the production of the mines of Potosí during the eleven problematical years, 1545-55. As for the rest of the vice-royalty, Lexis' result is very close to the one based on the treasury papers. The difference may easily be accounted for, as already said, by exaggerated figures assumed for Chili. In regard to the annual gold production, if we again ignore Chili, Lexis seems very near the truth. Soetbeer over-estimates by a fourth or a fifth.

SUMMARY

| | <i>Soetbeer</i> | <i>Lexis</i> | <i>Present Estimate</i> |
|----------------------|-----------------|--------------|-------------------------|
| Peru. 1533-60: | | | |
| Gold | 5,214,000 | 9,108,400 | } 28,350,000 |
| Silver | 43,800,000 | 12,353,000 | |
| Upper Peru. 1545-60: | | | |
| Gold | 6,330,000 | 1,978,000 | } 56,000,000 |
| Silver | 120,110,000 | 102,000,000 | |
| Chili: | | | |
| Gold | 12,800,000 | 12,800,000 | |
| Totals: | | | |
| Gold | 24,344,000 | 23,886,400 | |
| Silver | 163,910,000 | 114,353,000 | |
| Grand Totals .. | 188,254,000 | 138,239,400 | 84,350,000 |

IV. NEW GRANADA

Of all the lands in the New World subdued by the Spaniards, that which in the end proved richest in the golden booty sought by the conquerors was the region called by them the Realm of New Granada, today the republic of Colombia. Its exploration and conquest, except along the coasts, came very late, after that of Peru, in the years 1534-38. The initial booty of the Spaniards was less than the ransom of Atahualpa, but the gold extracted from its mines and streams soon surpassed in quantity that produced by Mexico or Peru.

Santa Marta, the first permanent settlement within the limits of the present republic, was founded in 1525 by Rodrigo de Bastides, one of the earliest explorers of the Caribbean coasts. Eight years later a companion of Bastidas, Pedro de Heredia, laid the first stones of the more famous Cartagena de Indias. But altho vague rumors were current of El Dorado and of wealthy, civilized nations living on the high plateaux of the interior, it did not fall to the lot of either to verify them. Bastidas gathered a few thousand pesos of gold, the slow accumulations of generations of Indians from the sands of the neighboring rivers and creeks; but he lost his life at the hands of envious associates. Expeditions set out from Cartagena into the interior after 1534, and returned with extraordinary tales. In a single Indian cemetery (were we to believe accounts so obviously exaggerated), golden ornaments were collected to the value of 300,000 pesos! Cieza de Leon, who as a lad of nineteen accompanied an expedition in 1537, gave most enthusiastic descriptions of the riches of the country. If the gold of all this region, he says, had belonged to a single prince, his wealth would have been greater than that of the Incas.¹

These gold-hunting raids from Cartagena, however, did not penetrate to the seat of the so-called Chibcha empire. The conquest of New Granada belongs to an obscure lawyer, Gonzalo Jimenez de Quesada, who came to Santa Marta in January, 1536, in the train of a new governor, Pedro de Lugo. Quesada, leaving Santa Marta in the following April with a force of about 500 men and 100 horses, after a year of terrible suffering

¹ Cronica del Peru, cap. cxv. Cf., on the other hand, the account of the expedition of George Espira, governor of Venezuela for the Welsera. He penetrated into the interior in 1535, with a company of 261 men and 80 horses, and emerged after three years with the loss of half his men and 66 horses. The total amount of treasure secured was 5,518 pesos, which after smelting and refining shrank to less than 1,600 pesos de minas. (Oviedo, lib. xxv, cap. 16.)

shows
of mining
village.

from heat and fever, insects and wild animals, emerged on the great plateau of central Colombia with a remnant of 170 followers. Here he found cultivated fields, prosperous towns, and what was of supreme importance to these "white children of the Sun," signs of great wealth in gold and emeralds. From Muqueta, Tunja and Iraca, the three chief pueblos of the Chibcha race, Quesada and his men secured rich plunder; and in August of 1538 they laid the foundations of their new city, Santa Fé de Bogotá.¹

The reports of treasure gathered in the expeditions from Cartagena seem on the face of them to be grossly exaggerated. From Quesada we for the first time obtain trustworthy figures. In a narrative composed later by the great conquistador himself, he tells us that the booty amounted to 191,294 pesos de oro fino and 56,682 pesos de oro bajo;² and these figures are corroborated by the ledgers of the first royal treasurer of the new colony.

As is so well known, Quesada's conquest of the plateau was scarcely complete, when two other companies of white men appeared simultaneously in his vicinity — one led by Sebastian Benalcázar, a captain of Pizarro, who had conquered Quito, and was induced by reports of the rich kingdom of the Chibchas to penetrate still farther north; the other, an expedition of a German named Nicolas Federmann, agent of the great banking house of the Welsers, who had made his way through the forest from Coro in Venezuela, also in search of the fabled El Dorado. Each of the trio claimed priority of discovery. According to one pious story, each had 160 men, one monk and one priest — the coincidence struck

¹ Oviedo, lib. xxvi, cap. 11.

² Each of the soldiers following Quesada received 510 pesos "oro fino," 57 pesos "oro bajo" and 5 emeralds.

their superstitious imaginations, and they promptly came to an agreement. Benalcázar and Federmann made terms with Quesada for ready cash, and the three men returned to Spain in the same ship, to press their respective suits at the Spanish court.

The first of Quesada's party to act as treasurer was Antonio de Lebrixa, one of the most active and intrepid of his captains. Lebrixa returned to Spain with his chief, and his accounts close on May 12, 1539, the day on which Quesada left Bogotá for the coast. Hernando Venegas took his place, and exercised the duties of treasurer till June, 1543, while Hernan Perez de Quesada, brother of the conquistador, was in nominal command of the colony. In the spring of that year arrived a new governor, Alonso Luis de Lugo, a renegade son of Quesada's old associate. Alonso had intrigued successfully against Quesada in Spain, and came out to America with a commission as adelantado of the province. He deprived many of the original conquerors of their lands and Indians, and Venegas lost his post as treasurer. Venegas' successor, Pedro de Briceño, a former treasurer of Santa Marta, was no more fortunate under the tyranny of the governor. The "caxa real" was plundered, and the royal officials imprisoned and maltreated. In March, 1544, the treasurer and contador fled to San Domingo, Briceño leaving powers with Hernando Xuarez de Villalobos to act as deputy in his absence.

The Spanish crown in 1545 sent out a commissioner to reduce the country to order, and with him Briceño returned to Bogotá. As a consequence of these dissensions, however, the royal accounts were reduced to a state of entire confusion. Briceño continued to act as treasurer till his death in December, 1552; and in the following month Andres Lopez de Galarra assumed the responsibilities of that office.

order
v.
Confusion

The most interesting of the New Granada papers are naturally those of Antonio de Lebrixa, who received the royal moneys at the time of the conquest. Here are some of his items:

Lo perteneciente á su Magestad de quintos de lo que se hubieron y allegaron mientras duró la conquista, lo qual se hizo partes y dividió entre los conquistadores:

| | Pesos | Tom. | Gran. |
|---|-------------------|------|----------------|
| oro fino | 38,259 | 0 | 0 |
| " bajo | 7,457 | 5 | 0 |
| " falonia | 3,688 | 0 | 0 |
| esmeraldas | 363 piedras finas | | |
| Quinto de lo que dio el cacique de Bogotá, Agosto, 1538: | | | |
| oro fino | 720 | 0 | 0 |
| " bajo | 520 | 0 | 0 |
| " falonia | 1,200 | 0 | 0 |
| esmeraldas | 62 piedras | | |
| Ibidem (another payment from the cacique): | | | |
| oro fino | 915 | 0 | 0 |
| " bajo | 224 | 0 | 0 |
| " falonia | 500 | 0 | 0 |
| esmeraldas | 60 piedras | | |
| Oro hallado en una sepultura: | | | |
| oro falonia | 340 | 0 | 0 |
| Quinto delo que se huvieron por el libro del veedor de la provincia de Venezuela, que vino con la gente de Federman que se huvo en aquella jornada: | | | |
| oro fino | 27 | 0 | 0 |
| " bajo | 525 | 0 | 0 |
| Quinto de lo que traxo Fernand Perez (de Quesada) quando fue a Tunja: | | | |
| oro fino | 52 | 0 | 0 |
| " bajo | 60 | 0 | 0 |
| Quinto del valor de dos esmeraldas grandes: | | | |
| oro bueno | 130 | 0 | 0 ¹ |

Soetbeer, with nothing to guide him but the vague and often exaggerated reports of contemporary chroniclers, fixed the average annual production of gold in New Granada in the sixteenth century at 2,000 kilo-

¹ Of these receipts, Quesada carried to Spain as a present to the emperor, 11,000 pesos "oro fino," and all the emeralds, 562. (Oviedo, lib. xxvi, cap. 11.) All of Oviedo's figures in this connection are substantially trustworthy.

grams. Lexis adopts the same figure. Taking as a basis the Spanish official ratio of gold to silver in the first half of the sixteenth century, this represents for the years 1538-60 a value of almost 19 million pesos fuertes. Soetbeer's reckoning, based on the ratio in 1879, was 30 millions.

pesos
fuertes →
8 reales

A Colombian scholar, Vicente Restrepo, in his volume entitled *Estudio sobre las minas de oro y plata de Colombia*, published in 1888, reached conclusions materially reducing Soetbeer's figures. Restrepo estimated the value of the gold produced in New Granada before 1600, as 53 million pesos. This presumes an annual production of 1,325 marcs, or a total of 31,800 marcs for the years 1538-60. At the sixteenth century ratio it was equal to about 12,600,000 pesos, over 6 millions less than the conclusions of Soetbeer.

In the ledgers of the royal treasurers, we find the receipts from the quinto and diezmo, between 1538 and the end of 1557, to be as follows:

| | Pesos | Tom. | Gran. |
|-----------------|---------|------|-------|
| oro fino | 73,923 | 3 | 0 |
| oro bueno | 165,470 | 2 | 8 |
| oro bajo | 166,755 | 2 | 0 |

No clear indication of the relative values of these various forms of gold is vouchsafed us, either in these ledgers or in the writings of contemporary colonists. It seems most probable, however, that the peso de buen oro was the "peso de oro de minas" of Mexico, of 450 maravedis. "Oro fino" may be identified with treasure secured by the Spaniards in the form of gold-dust, and granted a value of about 490 maravedis. The "peso de oro bajo" was perhaps worth anywhere from 200 to 300 maravedis.

oro fino =
may rep
gold-dust

Reducing the above figures to pesos of 8 reals, we have the quinto amounting to 516,600 pesos, and the

diezmo to 57,100. To cover the period, 1558-60, for which there are no figures, we may strike an average for the preceding five years, and add a 35 per cent increase. On this basis, the entire income of the crown from the mines was 720,000 pesos, representing a total registered production of about 4,054,000 pesos.

As in the case of Peru, however, there is reason to believe that a considerable percentage of the gold mined never paid the government tax. There may also be mistakes or omissions in the records themselves, for these ledgers, as I indicated above, are in some places imperfect. To meet such possibilities, we may make the liberal allowance of 50 per cent. The figure, 4,054,000, would then represent about two-thirds of the gold-production of the country, registered and unregistered. The entire output would amount to 6,081,000 pesos. But even this result is less than one-half the estimate of Restrepo, and about 32 per cent of that of Soetbeer and Lexis.

SUMMARY

| | |
|------------------------|------------------|
| Soetbeer..... | 18,990,000 pesos |
| Restrepo | 12,600,000 " |
| Present estimate | 6,081,000 " |

V. WEST INDIES AND TIERRA FIRME

It was the half-circle of the West Indian islands which Columbus reached on his momentous voyage to the coasts of Cathay. And it was from these islands and from the neighboring shores of Central America that the first remittances of gold were sent back to Europe. If Columbus had a higher motive in seeking the Indies, perhaps the delivery of the Holy Places from the infidel, the explorers who followed immediately in his steps were mostly prompted by the hope of find-

ing lands where gold was to be easily secured. Even Columbus believed that "el oro es excellentissimo con el se hace tesoro y con el tesoro quien lo tiene hace quanto quiere en el mundo y llega á que hecha las animas al paraíso."

The reports of these early Spanish adventurers did more credit to their fancy than to their observation. And altho they served to nerve the nation to new undertakings, they also prepared the way for deep disillusion. The actual returns of gold during the first decade must have been in sharp contrast to the expectations thus engendered.

Only after the coming of Bobadilla to Hispaniola as governor in 1499, apparently, did the colonists develop the gold-washings on the island to any great extent; largely, perhaps, because the new governor granted them exemption from the payment of the royal tax.¹ The fleet of eighteen vessels which sailed for Spain with Bobadilla and Roldan in 1502, and the greater part of which perished by the tempest in which Columbus almost lost his life, was considered the richest of its time. The treasure it carried was little over 100,000 pesos de oro, divided between the king and private individuals.²

Altho Bodadilla's successor, Ovando, was strictly enjoined to enforce the royal dues and collect the arrears of Bodadilla's time, the exploitation of the gold-washings continued, entailing the rapid extermination of the unfortunate native population. It reached its zenith probably toward the end of the second decade of the sixteenth century. There were two regions on the island round which these activities centered: one some

¹ Navarrete, *Colecc. de viajes*, etc., vol. ii, p. 273.

² Gómara, *Hist.*, lib. i, cap. 32; Oviedo, *Hist.*, lib. iii, cap. 9. The treasure included a nugget for the queen weighing 3,600 pesos. Las Casas says that there were 28 vessels carrying 200,000 pesos.

thirty miles from the city of San Domingo, called San Cristobal; the other, the more famous Cibao, about ninety miles from the capital. Peter Martyr wrote, probably in 1510, that the two districts produced over 300,000 pesos de oro a year.¹ The annual yield was perhaps never more than 400,000 or 450,000.

After 1520 the gold-production of Hispaniola seems to have rapidly declined. Small-pox and ill-treatment decimated the Indian laborers; the gold-washings themselves were gradually exhausted; the introduction of sugar mills diverted the colonists' attention to agriculture; the newly explored regions on the mainland drew men more and more from the islands. The annual output of gold dwindled to 30,000 pesos.² If the remittances from Hispaniola continued to be larger than such a figure would warrant, it is because bullion from the neighboring islands of Porto Rico, Cuba and Jamaica, as well as from Central America and Venezuela, generally passed through the hands of the San Domingo treasurer on its way to Spain.

Porto Rico and Cuba, settled by Spaniards in the second decade of the century, at first also yielded considerable quantities of gold-dust and nuggets. They made their largest returns about the same time as did Hispaniola, each producing perhaps 100,000 pesos a year. But the duration of the gold-washings, especially

¹ Decade I, lib. 10, cap. 3.

² Colecc. de doc. ined., 2d ser., vol. ii, p. 370. Soetbeer, p. 49, incorrectly makes the figure refer to Sta. Marta.

In the meantime, between 1500 and 1520 the percentage reserved to the crown was gradually reduced. At first, by an ordinance of April 10, 1495 (Nav. Colecc., vol. ii, p. 165), the crown was to receive two-thirds of the gold collected on the island. This had been the rule in Spain, at least since the time of Juan II (Gallardo, vol. vi, pp. 1-19). Between 1500 and 1504, in reply to petitions from the colonists, the crown's share was successively reduced to one-half, one-third and one-fifth. (Colecc. de doc. ined., 1st ser., vol. xxi, pp. 13, 216; 2d ser., vol. v, p. 43.) The "quinto" was established for ten years by a cedula of February 5, 1504, and continued till 1520. In the latter year the tax on placer gold was fixed at a diezmo, or one-tenth (ibidem, 2d ser., vol. ix, p. 460), suffering no other reduction till 1552, when it was made one-twelfth (A. de I., 6-3-2/14, ramo 5).

Introduction
of sugar mills
diverts
colonists'
attention

in Cuba, was very brief, and both islands soon repeated the history of the older colony.

Figures of the booty captured in the various expeditions along the coasts of Darien, Santa Marta and Venezuela, as they are reported by Gómara, Oviedo and Herrera, give an exaggerated impression of the income of Spain from such sources. If some rich finds were made, the total results were meagre enough. Most of the raids scarcely repaid the blood and treasure expended. And the few gold deposits discovered in those regions before the conquest of Mexico, were exhausted even more quickly than the gold-washings on the islands.

booty
captures
give
exaggerated
impression
of Spain

Guatemala, and its dependent provinces of Honduras and Nicaragua, continued to produce some gold after the raids of the first conquerors. But compared with the wealth of Peru or New Granada, its yield was very slight. It scarcely exceeded on an average 40,000 pesos a year. And by 1560 the output was almost negligible.

Soetbeer and Lexis possessed no information regarding the gold production of these regions save what they could find in the "Coleccion de documentos ineditos" and in the historians. So their estimates again were highly problematical. For the years 1493-1520, Soetbeer assumed an average annual production of between 700 and 750 kilograms; for the years 1521-44, about 300 kilograms. This means, at the sixteenth century ratio between gold and silver, a value of 10,880,000 pesos. Lexis' figure is 48,000 kilos for the entire period, or 18,990,000 pesos.¹ My own result is based upon a careful consideration of data too miscellaneous to be included in the present paper. It comes remarkably close to the approximation made by Lexis, *i. e.*, 17,000,000.

¹ At the nineteenth century ratio adopted by Soetbeer and Lexis, the figures are 17,187,500 and 30,000,000 respectively.

VI. RESUMÉ

We have passed in review all the regions of the New World from which gold and silver were obtained in the sixteenth century. In most cases a substantial reduction has been made from the figures till now received as authoritative. The difference will appear more clearly in a table summarizing the foregoing estimates:

| | <i>Southoeer</i> | <i>Lexia</i> | <i>Present Estimate</i> |
|-------------------------------|------------------|--------------|--------------------------|
| Mexico: | | | |
| Gold | 4,723,550 | 13,700,000 | 5,692,570 |
| Silver | 12,520,200 | 16,900,000 | 26,597,280 |
| Peru and Chili: | | | |
| Gold | 18,014,000 | 21,908,000 | 28,350,000 |
| Silver | 43,800,000 | 12,353,000 | |
| Upper Peru: | | | |
| Gold | 6,330,000 | 1,978,000 | 56,000,000 |
| Silver | 120,110,000 | 102,000,000 | |
| New Granada: | | | |
| Gold | 18,990,000 | 18,990,000 | 6,081,000 |
| West Indies and Tierra Firme: | | | |
| Gold | 10,880,000 | 18,990,000 | 17,000,000 |
| Totals: | | | |
| Gold | 58,937,550 | 75,566,000 | |
| Silver | 176,430,200 | 131,253,000 | |
| Grand Totals: | 235,367,750 | 206,819,000 | 139,720,000 ¹ |

VII. SEVILLE

In view of the rôle played in European politics by Ferdinand of Spain and his grandson Charles V, it is interesting to know exactly the amount of revenue drawn by these princes from their ultramarine possessions. Precise figures are the more important because of the vague ideas of contemporary and later historians. All the royal moneys from the Indies, whatever their origin, passed through the Casa de Contratacion in

¹ 139,720,000 pesos of 8 reales were equivalent to 101,345,000 ducats.

(Seville,^{Spain} From the records of this institution, therefore, such information should be readily obtainable.

The receipts, decade by decade, of the treasurers of the Casa from 1503 to 1560, are as follows:¹

| | Maravedis | Marcs | Ons. | Och. | Tom. | |
|---------|---------------|-------|------|------|------|----------------|
| 1503-10 | 148,960,161 | 13 | 1 | 4 | 0 | (oro guanines) |
| 1511-20 | 260,298,589 | 136 | 7 | 4 | 3 | " " |
| 1521-30 | 203,331,584 | | 7 | 1 | 3½ | " " |
| | | 1 | 3 | 5 | 4½ | (oro en polvo) |
| 1531-40 | 694,368,519 | 1,996 | 5 | 1 | 1 | (oro guanines) |
| | | 132 | 5 | 3 | 2 | (oro en polvo) |
| | | 8,081 | 0 | 7 | 0 | (plata) |
| 1541-50 | 554,001,827 | | | | | |
| 1551-60 | 3,952,055,449 | | | | | |

The total receipts to 1560 amounted to almost six billion maravedis, or over 21,371,000 pesos of 8 reals. The gold and silver given in the table by weight, which probably represented plate, jewels, gold-dust, etc., part of the spoils of the "conquistadores," I have valued at 175,000 pesos. This brings the final figure to nearly 21,550,000 pesos.

So much of the income of the Spanish crown in America actually reached the shores of Europe. It was probably two or three millions more than the whole proceeds of the quinto, and perhaps 80 per cent of all the moneys received by the American treasurers during this period.² This revenue, of course, does not comprise the total importation of coin and bullion from the New World. The sums which came over on the account of

more
money
reaches
Spain than
just the
quinto

¹ For the years, 1523-25, the records of which are wanting, I have assumed an annual average of 16,858,000 maravedis. For the year 1560, again, I have assumed a receipt of 400 million maravedis.

The items by weight under "1531-40" represent part of the plunder of Peru. The 1,996 marcs was the second shipment, in charge of the contador, Antonio Navarro (the first had been brought back by Hern. Pizarro). It was equal to about 100,000 pesos de minas.

² The expenses of government in America after the creation of the vice-royalties certainly consumed more than 20 per cent of the receipts. They probably amounted nearly to 50 per cent. The figure in the text, 80 per cent, results from the fact that in the earlier years of all the colonies, before an elaborate administration was set up, by far the greater part of the royal income was shipped to Spain.

before
elaborate
admini-
strat-
ion set up
greater part
of royal
income
reached
Spain

merchants and other private individuals must have been many times greater. Unfortunately we have no records of them approaching in completeness those for the receipts of the king. Every peso of gold or silver shipped from an American port had to be carefully registered, and two copies of the register forwarded to Seville on different vessels. But almost all of these registers have disappeared. The few surviving in the Archivo de Indias are of too desultory a character to make any generalizations from them possible.

We may gain some idea, however, of the extent of such importations on the principal armadas which returned from the Indies before 1560. The crown early fell into the habit, whenever it was in straits for money, of appropriating all or most of the private remittances brought back by the fleets. The dispossessed persons were generally recompensed with perpetual annuities paying from 3 per cent to 6 per cent on the capital seized. All treasure so embargoed was noted as part of the receipts of the Casa de Contratacion. The first important confiscation of this sort I have found was in 1523. It amounted to 300,000 ducats, and represented all the gold and silver that came from the Indies in five vessels on the account of passengers and merchants. The money was required for the war between the young emperor and his rival Francis I. In 1535, to meet the expenses of the campaigns against Barbary, 800,000 ducats were seized out of the treasure arriving in four ships from Peru. Over 230,000 were taken in 1538, on the return of the armada of the Blasco Nuñez Vela, and a like amount in 1545. In 1553, 600,000 ducats were confiscated from the fleet of which Bartolome Carreño was admiral, and 425,000 from the Mexican fleet of Diego Felipe two years later. The most considerable of these embargoes was in the winter of 1556-57, of the

bullion carried on the two fleets which returned from Vera Cruz and Nombre de Dios in the previous autumn. It reached a total of 1,600,390 ducats and was $2\frac{1}{2}$ times the sum brought on the account of the king. The gold and silver confiscated on Carreño's fleet was equal to $78\frac{1}{2}$ per cent of the royal treasure, and that from the fleet of Diego Felipe amounted to 60 per cent. Altogether the sum so secured during the reign of Charles V, was about five million ducats.

The report that one of these Indian argosies had been sighted off the Azores was news of supremest interest, not only to the Seville merchants, but at the court of Madrid, in Flanders, and in Germany. On the safe arrival of the galleons before San Lucar at the mouth of the Guadalquivir, or in Cadiz harbor, often depended, even in the time of Charles V, the monetary solvency of the government.

As Spain was never commercially self-sufficient, never manufacturing enough to meet her own needs, there was a lucrative import trade which attracted hosts of foreign merchants to the country. Germans and Genoese,¹ in the sixteenth century, gathered into their hands not only a virtual monopoly of the Spanish fairs, but all the financial business as well. During the emperor's reign they became a serious menace. As neither the revenues in the peninsula nor the treasure from the Indies was sufficient to cope with the expense of the wars, Charles was forced into greater and greater dependence upon these foreign capitalists. The returns of gold and silver from America were mortgaged in advance, and the Fuggers, the Haros and the Grimaldi were as much concerned with the safety of the Indian

¹ In the earlier part of the century also a few Spanish merchant-princes established at Antwerp, like the Haros and the Vaglios. (Ehrenberg, *Das Zeitalter der Fugger*, pt. I, cap. 4.)

fleets as was the crown itself. In 1520-21 the Fuggers had 33,000 ducats hazarded upon the remittances from the New World; and of the 800,000 ducats embargoed by the crown in 1535-37, over 100,000 went to this same German house.

Increasing production of gold and silver was the most important cause of the price revolution of the sixteenth and seventeenth centuries. As by far the greater part of this metallic wealth came from America, the function of Spain in the movement was a very significant one. She became the distributor of the precious metals to the rest of Europe. And since she "produced little and manufactured less," she performed this function with an efficiency which startled even the Spaniard. The balance of trade in Spain was always unfavorable. In time of greatest prosperity and in spite of all laws, money passed out of the country. But with the injury to agriculture which must have resulted from the revolt of the Comuneros, and with the naïve efforts of the Cortes to stem the rise of prices, the situation of Spain toward the middle of the sixteenth century was already becoming intolerable.¹ Her manufactures, even her grain, came to her from France, England and the Netherlands, and thither went her gold and silver in exchange.

Spain, moreover, could not supply the goods demanded in increasing quantities by the Indies, when she did not have enough for her own population. Again strangers were resorted to, and to them the Spanish merchant lent his name to elude a law which made commerce with America a monopoly of the home-country. So in time the foreigner engrossed the greater part of the colonial trade as well, and much of the treasure from the New World was probably diverted immediately to

¹ Bernays, *Zur inneren Entwicklung Castiliens*, pp. 404 ff.

cause
of
price
revolution
16th-17th
cent.
Spain
produced little
+ manufactured
less
→
calls
for
efficiency
yet were
these introduced
by Spain
financially
efficient
at this time?

the north of Europe. Altho license was necessary from the crown, this export of gold and silver was the more preferred because the goodness of Spanish coins exalted them above those prevailing in other countries, and made them certain to yield a handsome profit abroad.

One other circumstance contributed to the export of the precious metals: Hapsburg imperialism, — the wide distances separating Charles' dominions, the universality of his interests, the expense of his endless wars. While troops in Italy or in the Netherlands were starving or without pay, the Spanish Cortes was inveigled into doubling the servicio,¹ or into an increase of the alcabala; or the cargoes of the plate fleets were requisitioned for the needs of the crown. Spanish funds were used to maintain an alien empire.

On such occasions the help of the ubiquitous foreign merchant-princes was again indispensable. The arrival of a rich Indian fleet in the Guadalquivir did not in itself mean the instant satisfaction of the needs of the moment. Even if remittances were sufficient in quantity, they could not forthwith be transported as bullion to Italy or Flanders. They had first to be coined into escudos and reals. Charles moreover rarely possessed the marine necessary to convoy the treasure in safety to his distant provinces. The government, therefore, called in the aid of the great commercial houses with international connections. Through them it was possible to make payments abroad with certainty and dispatch, the bankers being recompensed with cash in Spain, or with assignments upon future revenues.²

Spain, in the first half of the sixteenth century, perhaps felt no immediate harm from this depletion of her

license
necessary
to
export

Why need
abundance
of exports

→ During
Chas II's
Alien Empire
took precedence
over his
Hereditary
monarchical
dominions

* lack
of
transport
safety

Great Commercial
Houses

no immed.
effect
from
coin
depletion

¹ Bernays, op. cit., p. 391. In Ferdinand's later years the servicio was 50 millions annually. After 1539 it was 150 millions.

² Ehrenberg, op. cit., pt. III, cap. 3.

coinage. A non-industrial country could not well absorb all the produce of the American mines. Moreover her stock of precious metals was continually being replenished from an apparently inexhaustible source. On the other hand, this American wealth did serve "to feed an unpractical vanity and further unfit the nation for manufacturing and commercial life." Everything could be purchased with gold and silver, not only cloths and grain, but armies, heretics, and the hegemony of Europe. The opportunity for conquest was offered by the Hapsburg connection. And Spain, by the loss of her industry and the plundering of her fleets, paid the cost of Hapsburg imperialism.

CLARENCE H. HARING.

BRYN MAWR COLLEGE.

APPENDIX

MONETARY VALUES IN SPANISH AMERICA IN THE FIRST HALF OF THE SIXTEENTH CENTURY

Both Soetbeer and Lexis attempted to resolve the complex question of monetary values in Spanish America in the first half-century of European occupation. Their information was gleaned from meagre references found in the "Coleccion de documentos ineditos," in the collection of Ternaux-Compans, and in the pages of sixteenth century historians of America such as Herrera and Garcilaso de la Vega. The American treasury records introduce further elements of confusion scarcely suspected before; but they also enable us to gain a juster idea of the standards of value employed in the American colonies.

In Hispaniola and other islands in the first two decades of the sixteenth century, bar gold was doubtless used by weight as a medium of exchange. The crown, however, also endeavored to put into circulation silver and copper coins sent over from Spain. In Seville is a copy of a cedula of April 15, 1505, ordering the officers of the Casa de Contratacion to coin and ship a half-million of silver and a half-million of vellon, the silver real to circulate at a value of 44 maravedis (A. de I., 139, I, 4, lib. i, fol. 159). A letter of Ferdinand to Governor Ovando, in the following December, refers to "dos millones de cuentos de moneda" being sent to Hispaniola, money which Ovando was to divide among the inhabitants in exchange for gold (Colecc. de doc., 2d ser., vol. v, p. 114). Another cedula of February 28, 1510, to Diego Colon, announces the sending of the "cuento de plata de vellon" (sic), for which the governor had asked to meet the lack of small currency in the colony (ibidem, p. xcvi); and in the ledgers of the India House are noted remittances to cover the value of coin thus sent out.

By selling silver reals at 44 maravedis, when their legal value in Spain was only 34, the crown made an excellent profit on the risk and expense of these shipments. And the real continued to circulate at the higher rate till 1538, when as a consequence of the establishment of mints in the Indies, its value in Hispaniola was arbitrarily reduced to 34, in conformity with the rule elsewhere (ibidem, vol. x, p. 401; Recop., lib. iv, tit. 24, ley 4). Letters to the emperor from judges, merchants and other inhabitants in 1538-39 represented the evils which such an act would bring upon the colony. Prices and wages would rise, trade cease, and the island be depopulated. As no one would bring silver to the newly-established mint, it had been closed and was let out to rent. It seems that in response to these appeals, Charles V extended the old rate for

bar gold
as
exchange
medium

five years more, after which interval the legal price of the real was to be maintained. (Colecc. de doc., 1st ser., vol. i, pp. 546, 558, 564. A. de I., patr. 2, 1, 2/21, no. 7; 53, 6, 8, no. 51; 139, 1, 10, lib. 22, fol. 314.)

Apparently in the first flush of discovery of these new lands, the Catholic Kings had intended to set up mints immediately to receive the precious metals secured there. In the instruction to Columbus of April 23, 1497, we read:

"Asimismo nos parece que quel oro que hobiere en las dichas Indias se acufie é faga dello moneda de excelentes de la Granada, segund Nos habemos ordenado que se faga en estos nuestros Reinos, porque con esto se evitara de facer fraudes é cautelas del dicho oro en las dichas Indias, é para labrar la dicha moneda, mandamos que lleveis las personas é cuños é aparejos que hobiéredes menester; etc." (Navarrete, Colecc. de viajes, etc., vol. ii, p. 184.)

Not till 1535, however, was a royal mint created in America. A cedula of May 11 of that year provided for a Casa de Moneda in the cities of Mexico and San Domingo. Only silver was to be coined, except in San Domingo where copper might be issued whenever the crown gave special license. The same rules were to be observed as in the mints in Spain (except that the master of the mint was to take three reals out of every marc of silver coined, instead of two), and pieces of eight, four, two, one and one-half reals were to be struck, to be current in the Peninsula as well as in the Indies. There is no evidence, however, that the third real was collected before the reign of Philip II. (Colecc. de doc., 2d ser., vol. x, pp. 264-271; A. de I., 139, 1, 1, lib. I, para. 7:—Instruct. to Ant. de Mendoza, 1st viceroy of N. Spain, April 25, 1535; Recop., lib. iv, tit. 23, ley 4:—Ord. of November 18, 1537. The ordinance of 1535 provided for the coining of one, two, and three real pieces, "medios" and "cuartillos.")

Up to Acosta's time at least (he went to the Indies in 1571), no copper was used on the mainland, owing to the abundance of gold and silver, vellon being current only in the islands (Hist. de Ind., lib. iv, cap. 3). Apparently gold was not minted in Mexico City till 1675, when its coinage was ordered by a cedula of February 25, of that year, "igual en todo à la que se acufaba en Espana" (Colecc. de doc., 2d ser., vol. x, pp. lxxii ff.).

Before the establishment of mints, means of exchange on the continent of America were extremely crude and confused. In the ledgers of the royal treasurers of Mexico, we find references to many kinds of pesos—"oro comun," "oro mejor que comun con tres quilates añadidos," "oro marcado," "oro de ley," "oro de ley perfecta," "oro de minas," "oro de Tipuzque." To discover the relative values of these various forms of gold is essential to a proper understanding of the ledgers.

Three clues are provided us by the treasurers themselves. We learn that after August 1, 1523, three carats were added to every peso de oro "demas de la ley," and that these three carats were equivalent to sixty maravedia. Such pesos, "mejor que comun," had a value 20 per cent higher than "oro comun," while "oro de ley perfecta" was 40-50 per cent higher. Two more suggestions come from two letters of the licentiate Salmeron, a judge of the Audiencia of Mexico, written to Spain

3 carats =
60 maravedis

in August, 1531. In one he says that there are 50,000 pesos "oro de Tipusque" circulating in the country, and that this base gold if converted into ordinary pesos de oro, would approximate 30,000 of the better sort. In the other, speaking of the rent paid to Cortes for the housing of the Audiencia in a portion of his palace, Salmeron remarks that the 9,000 "pesos corriente" already paid the Marquis equal about 6,000 "pesos de oro de minas." Lastly there is the testimony of Bernal Diaz del Castillo that the Spanish authorities in the beginning circulated gold of three carats less than the legal fineness in order to aid the soldiers in the payment of their debts, and incidentally to defraud the merchants who had come to Vera Cruz to trade. This baser gold, he continues, was called "Tipusque," an Indian word meaning copper. Eventually the Emperor, moved by petitions from the colonists, ordered the payment of customs dues (almojarifazgo) and judicial fines (penas de camara) to be made in this "oro de Tipusque," so as to withdraw it from the country.

Soetbeer and Lexis have made clear that the usual standard of value in the Indies in the first half of the sixteenth century was a peso de oro worth 450 maravedis and about 22 carats fine (a peso 22 carats fine was strictly worth 454 maravedis; a peso of 450 maravedis was strictly 21.81 carats fine). Their conclusion is confirmed by the colonial records in Seville. This peso was not a coin, but an imaginary unit; it represented, like the castellano in Spain, one-fiftieth of a marc of gold; and it came to be known as the "peso de oro de minas." As the relation between gold and silver was roughly taken to be 1-10, a marc of silver was said to be worth five of these pesos de oro. Very soon, however, silver was reckoned at the legal value set upon it in Spain, 65 reals or 2,210 maravedis, which implied a ratio of 1-10.18, very close to the legal ratio, which was 1-10.11.

The peso de oro de minas was the unit of exchange from the conquest until the thirties of the sixteenth century. Men paid in uncoined gold of a certain weight and fineness. But in the thirties the output of the Mexican silver mines began to be felt, silver became more common than gold, and was used more and more as a circulatory medium. And as till 1537 there was no American currency, silver too was used by weight as equivalent for these imaginary pesos de oro. After 1537, however, when a mint was in operation in Mexico City and silver pieces of eight reals were issued, the silver peso naturally superseded the peso de oro de minas as a unit of value. But the process was a slow one, and till well into the following century the imaginary peso of 450 maravedis continued to be used in buying and selling bar gold and silver (Soetbeer, op. cit., p. 135, says that it was used only in connection with gold bullion). The silver peso of eight reals or 272 maravedis was the famous Spanish dollar or "piece of eight" of trade the world over.

Of the numerous kinds of gold mentioned in the ledgers of the royal treasurers of Mexico, it is probable that "oro de ley perfecta" represented pesos of the full value of 450 maravedis. If this gold was rated 50 per cent higher than current or common gold, the latter must be worth only 300 maravedis and have a fineness of about 15 carats. If current gold with three carats added was worth 60 maravedis more than before, its value must be about 360 maravedis. This is confirmed by

the statement of the treasurer that it was 20 per cent higher. And the whole reasoning falls in with the remark of Salmeron that 9,000 pesos "corriente" equalled 6,000 pesos de oro de minas. It may also help to explain the statements of some seventeenth century writers that there was an imaginary unit called the peso ensayado of nine reals (306 maravedis.) (Brit. Mus. Add. Mss., 13,976, fol. 46; Veitia Linaje: *Norie de la Contratacion*, p. 274.)

The value of the "oro de Tipusque" is always clearly indicated by the treasurers — 272 maravedia. It agrees with the other testimony of Salmeron, that 50,000 pesos de Tipusque were worth 30,000 of the better pesos.

Our table then is the following:

| | |
|--------------------------------|---------------|
| Peso de oro de Tipusque | 272 maravedis |
| " " " corriente | 300 " |
| " " " " con 3 quil. anadidos . | 360 " |
| " " " de ley perfecta | 450 " |
| " " " de minas | 450 " |

These figures afford a reasonable explanation of the early Mexican treasury records. At the time of the conquest the Spaniards brought with them from the West Indian islands the peso do oro of 450 maravedis. But owing to the crude means of testing the fineness of gold in the jewels, ornaments, etc., constituting the most important part of the plunder, that which passed for "oro de ley" was much closer to 18 than to 22 carats. Moreover the weights used by the conquerors were evidently at fault. In fact we are told by Bernal Diaz that they had to manufacture their own scales and weights to ascertain the value of their booty. Lastly, the Spaniards deliberately debased the gold in circulation, as recorded by this same chronicler. It was doubtless to correct this final blunder that after August 1, 1523, three carats were added to every peso of bullion refined by the royal officials, as we discover in the ledgers of 1522-24. The actual value of the peso before this correction was about 300 maravedis, after the correction about 360 maravedis. The latter was the "peso corriente con tres quilates anadidos." Each, however, in the beginning was current as the peso de oro of 450 maravedis.

Most of the gold in circulation between 1524 and 1530 was in one or the other of these forms. But in the records of these same years we find appearing for the first time "oro de ley perfecta"; and this seems to have been the peso finally raised to its full weight and fineness. Such gold always paid one-fifth to the crown, while other bullion was taxed at rates ranging from one-sixth to one-twelfth.

In the accounts of 1530-31, only "oro de ley perfecta" and "oro comun" are the units used. "Oro de minas" is mentioned, but it refers rather to the source of the gold than to the value of the peso. Not till 1531-37 do we find the "oro de Tipusque," worth 272 maravedis. It is contrasted with "oro de ley perfecta" and with "oro de minas de marca real." It was likely the "oro comun" of earlier ledgers, from this time forward accepted by the government at a considerable discount from its current value in the country. Bernal Diaz says that it was all

withdrawn from circulation and shipped to Castile (Hist. Verdadera, cap. 157); but his statement is not borne out by the evidence of the treasurers' records.

From 1531 onwards, then, there were only two kinds of pesos legally current in Mexico, that worth 450 maravedis, and that worth 272. The latter either by chance or by policy equalled exactly in value the "pieces of eight" which were coined in Mexico City after 1537, and which soon became the standard money of the country. The former remained an imaginary unit employed for another 150 years in transactions dealing with the bullion at the mines.

The earliest treasury records of New Granada mention three forms of gold — "oro fino," "oro bueno," and "oro bajo" (or "chafalonía"). There was no Casa de Moneda in the colony in these early years, and consequently no coinage of silver pesos. In 1559 and 1560 the audiencia complained of this state of affairs, and urged the establishment of a mint for the issue of silver and vellon (A. de I., 116, 5, 6, lib. ii, fol. 3). In 1563 the lic. Angelo de Castejou wrote that in Pamplona gold-dust was still the current medium of exchange. From the treasurers' accounts, moreover, it is clear that the amount of silver produced by the country was almost negligible. Gold must therefore have been almost the sole medium in use, and the likeliest unit of value was the peso of 450 maravedis, the one common in all parts of Spanish America before the minting of silver. And as in the later accounts, from 1547, when the colony was more settled, the receipts are almost universally reckoned in "pesos de buen oro," I have identified this particular form with the peso de minas of Mexico and Hispaniola.

"Oro fino" appears of less and less importance in the years succeeding the foundation of the "realm." It seems reasonable to suppose that this might represent treasure obtained by the Spaniards in the form of gold-dust. In the beginning gold-dust would be the handiest circulating medium; and at first it would probably be computed at its own weight and value rather than as interpreted in pesos de minas. As it would have a very high degree of fineness, it might easily be current at the value given the gold peso or castellano in Spain, 490 maravedis (the peso de oro 24 carats fine was worth 495.26 maravedis). Such, at least, is the value I have assumed for it.

The peso de minas was also carried by the conquistadores to the Pacific coasts of South America; and continued to be the general unit of value till the establishment of mints in Peru brought about a repetition of the situation in Mexico.

One more type of peso in Spanish America needs to be mentioned. Francisco de Toledo, viceroy of Peru (1569-81), issued an order that when the quinto and tribute of the Indians was paid in silver or reals, the peso was to be reckoned at 12½ reals (425 maravedis). This was later called the "peso ensayado de tributos." Philip II, by a cedula of June 29, 1592, extended the order to all the Indies. (Recop., lib. viii, tit. 8, ley 8.)

RECENT DEVELOPMENTS IN TAXATION IN OHIO

SUMMARY

1. Developments to 1910. Commission of 1908, 481. — Partial adoption of its recommendations, 482. — II. Tax rate limitation, 488. — Origin, 488. — Provisions, 489. — Influence on expenditures, 492. — Influence on return of property, especially intangible, 494. — Future of the policy, 501. — III. Centralized assessment. Tax commission's proposals, 503. — The Warnes law; appointive assessors, 508. — Effect on property valuations, 511. — Further effects, 514. — IV. Conclusion, 516. — Method of selecting assessors, 517. — Amendment of the constitution, 518. — Administrative methods; taxation at source, 519.

I

THE Ohio constitution of 1851, substantially following the Kelley tax law of 1846,¹ fastened the general property upon the state by its provision that

"Laws shall be passed, taxing by a uniform rule, all moneys, credits, investments in bonds, stocks, joint stock companies, or otherwise; and also all real and personal property, according to its true value in money. . . ."²

An act of 1852³ brought the tax laws more fully into accord with the new constitution, and acts of 1859⁴ and 1878⁵ codified the various scattered provisions of the statutes relating to taxation. Aside from the development of the tax on foreign insurance companies, of the franchise tax on the capital stock of corporations, of the excise taxes upon public service corporations, and

¹ 44 Ohio Laws, 85; amended by 45 Ohio Laws, 60.

² Article XII, Section 2, Constitution of Ohio.

³ 50 Ohio Laws, 135.

⁴ 56 Ohio Laws, 175-218.

⁵ 75 Ohio Laws, 496-507.

of the "unit rule" in the assessment of the property of express, telegraph and telephone companies¹ there was little important tax legislation during the next half-century.

The beginning of the recent tax reform movement in Ohio may fairly be dated from the report of the Honorary Commission of 1908, which directly attacked the general property tax, as well as the administrative system which had resulted from a half-century's piecemeal legislation. The recommendations of the commission were: (1) a constitutional amendment abolishing the general property tax; (2) a state tax board to administer all laws for the collection of state revenues and to make recommendations; (3) more frequent appraisement of real estate; (4) the separation of state and local revenues; and (5) publicity in local taxation.²

The recommendations which related to administrative features of the tax system were, on the whole, cordially received. An act of March 12, 1909,³ as amended in 1910,⁴ provided that appraisals of real estate for purposes of taxation should be quadrennial, instead of decennial as theretofore. The unsatisfactory character of these infrequent appraisements is made clear by an examination of assessed valuations between 1871 and 1910. During this period the valuation of land and improvements increased \$631,325,597. Between the decennial appraisals, assessors of personalty were required to make additions for new buildings and deductions for destroyed buildings: the net additions to the real estate duplicate on this account amounted in

¹ For a convenient account of these taxes, see E. L. Bogart, *Financial History of Ohio* (vol. I of the University of Illinois Studies in the Social Sciences), pp. 323-329, 336-345. This and later legislation is also described by Professor Bogart in the *American Economic Review*, vol. I, pp. 505-518. Possibly the liquor tax should be included in the list of important tax legislation.

² Report of the Tax Commission of Ohio, 1908, pp. 34-45.

³ 100 Ohio Laws, 81.

⁴ 101 Ohio Laws, 7.

this period to \$610,135,064.¹ That is to say, in forty years the increment of land value in the entire state, as shown by tax assessments, amounted only to \$21,190,533! In contrast with this, the equalized value of real estate in 1911, the year of the first quadrennial appraisalment, was \$1,661,000,000, or 154 per cent larger than the valuation of 1910. The state has now, by the act of May 6, 1913,² accepted annual appraisements of real estate.

The recommendation for a permanent tax commission was adopted by the act of May 10, 1910,³ amended May 31, 1911.⁴ That body was charged with the administration of the franchise and excise taxes upon corporations, with the assessment of the property of public utilities⁵ (formerly assessed by various *ex-officio* boards), and with the equalization of bank shares and of real estate valuations. In marked contrast with the character of previous state boards of equalization, the commission was constituted a true board of assessment, and not merely a board of equalization, through the injunction to see to it that all property is assessed for taxation at its true value in money. The commission was also given general supervisory power over the assessment of property, with authority to order a reappraisalment of the real or personal property in a taxing district, to appoint appraisers for such reappraisements, to reconvene boards of review and equalization, and to raise or lower the assessed valuation of any real or personal property. The law, however, still vested in the auditor of state considerable authority over local assessing officers, mainly incident to his

¹ Report of the Tax Commission of Ohio, 1911, p. 25.

² 103 Ohio Laws, 786.

³ 101 Ohio Laws, 399.

⁴ 102 Ohio Laws, 224.

⁵ The term was now much extended as compared with its former definition.

authority to prescribe the form of the tax statement.¹ The act of 1913² makes the tax commission unequivocally the head of the assessment machinery of the state.

The act providing for quadrennial appraisement required the publication of pamphlet lists of real estate valuations, giving lot and street numbers or other description, and feet frontage or acreage.³ The act of 1913 requires a quinquennial list, and a list of changes in valuations in intermediate years. The quinquennial lists are required to show separately the valuation of improvements, minerals and mineral rights.⁴

Other recommendations of the commission have not fared so well at the hands of legislature and people. Complete separation of the sources of state and local revenue has not been achieved, altho there has been but a small state levy since 1902, — not, indeed, for general state purposes, but for common schools, universities and sinking fund.⁵ The legislature has taken no action on this recommendation, except as state revenue from special sources has been augmented by increases in the rates of the excise and franchise taxes. The tax commission proposed in 1911 that the county should be made the unit for school purposes, thus dispensing with the state common school levy, and that the sinking and university funds be made a charge on the general revenues, together with any state aid required for common schools in the poorer districts. In case the general revenue fund should prove inadequate for these additional demands upon it, the commission proposed to

¹ Section 5366, General Code of 1910.

² 103 Ohio Laws, 786.

³ 100 Ohio Laws, 81, amended by 101 Ohio Laws, 7.

⁴ 103 Ohio Laws, 786, Sections 22 and 23.

⁵ The sinking fund levy provides the interest on the so-called "irreducible debt" of the state, which consists of funds derived from the sale of school and university lands and from special endowments, and received by the state as a perpetual 6 per cent loan. Practically all the interest on this debt is used for educational purposes.

apportion the needed state tax among the counties according to total revenue raised.¹

The desirability of separation has occasionally been questioned on the double score of inadequate support of the common schools, and of insignificance of the present levy.² The plan of the tax commission would seem to dispose of the first of these objections,³ while the hard fact that the state levy, tho small, was one of the factors considered by real estate appraisers in 1910 in determining what valuation to place on property, casts doubt on the sufficiency of the second objection. For entirely different reasons, separation is not now a pressing problem in Ohio. The system of centrally appointed county assessors established by the act of 1913 has resulted in more uniform assessments not only within the county, but also throughout the state, through the removal of dependence upon the favor of the local electorate. The power of the tax commission to promulgate rules and regulations for the valuation of property, and to equalize valuations, has also tended to secure greater uniformity. With uniformity secured, separation as a measure of mere tax reform loses much of its importance.⁴

The proposal to abolish the general property tax is the only recommendation of the commission of 1908 on which adverse action has been taken. At the regular election in that year an amendment which would liberalize the taxation article of the constitution was submitted to the electors and received 339,747 affirma-

¹ Report, 1911, pp. 38-40.

² See, for example, E. L. Bogart, *Financial History of Ohio*, pp. 253, 254; also *American Economic Review*, vol. 1, p. 515.

³ Moreover, the state is obligated, under certain conditions, to contribute to the tuition fund of impecunious school districts. Sections 7595, 7596, 7597, General Code of Ohio.

⁴ For somewhat similar views as to the effects of centralized tax administration, see T. S. Adams, in *First National Conference on State and Local Taxation* (1907), pp. 515-527; and C. J. Bullock, in *Quarterly Journal of Economics*, vol. xxiv, pp. 437-468 (May, 1910).

tive votes and 95,867 negative votes; but under the constitutional rule then obtaining, the proposed amendment was declared lost because it had not received a majority of all votes cast at that election. A ceaseless controversy has since waged as to whether those not voting on the proposal can properly be held to have voted "no," or merely failed to vote through ignorance and carelessness.

The next step of the tax reformers was to secure the calling of a constitutional convention, which convened in January, 1912. Because dissatisfaction with the uniform rule of taxation was the principal cause of its calling, the convention was expected to afford some relief from that rigid rule, if not to provide in terms for classification, with low rates upon intangible property. Probably largely because of the prominence of the single taxers in the convention, the proposal to classify property became confused in the minds of many delegates with the single tax, and was therefore opposed. Moreover, the state tax commission strongly advocated the retention and extension of the uniform rule.¹ It should further be remembered that Ohio's well-earned reputation for drastic tax legislation is the direct outgrowth of a very general popular acceptance of the uniform rule; in the words of Chairman Dittey, "the people of this state are wedded to the theory of a general property tax." These considerations afford the explanation of the overwhelming majority by which the convention voted to re-submit the uniform rule, together with a provision for the taxation of bonds of the state or of its political subdivisions issued after January

¹ See the addresses of Chairman Dittey entitled: "Taxation; Proposed Constitutional Changes" (Pamphlet, Columbus, 1912); and "Uniform Rule and Tax Limit Legislation in Ohio" (Sixth National Conference on State and Local Taxation, 1912, pp. 215-233). Similar views are expressed in the Annual Report of the Tax Commission of Ohio, 1911, especially pp. 32-38. The writer has reviewed this report in the *American Economic Review*, vol. II, p. 729 (September, 1912).

1, 1913. This proposal was adopted at the special election of September 3, 1912 by a majority of 19,175 in a total vote of 518,903, or about half the total vote in the regular election in November.¹

The taxation of municipal bonds promised for a time to become the entering wedge for the revision of the taxation article along more liberal lines. As a result both of financial conditions and of the tax on municipals, issues made early in 1913 found a poor market, and could be sold only on an interest basis varying from one-half to one per cent above customary rates. That rates did not advance more sharply is due to the improbability that the bonds would actually be taxed.²

The result of the declining price of bonds was a movement in favor of the submission to the people of an amendment exempting all state and municipal bonds from taxation. Advocates of classification seized upon this opportunity to secure a revision of the fundamental rule of taxation. There was no reason to suppose that there had been a change in the attitude of voters on this question, but strong ground for hope of a favorable vote was afforded by the adoption in 1912 of a rule for amending the constitution, whereby an amendment carries if it receives the approval of a majority of those voting *on that question*. But the path of taxation amendments is not yet smooth, for a proposal to submit to the people an amendment providing for classification was overwhelmingly defeated in the legislature of 1913, while a proposal to exempt public bonds was approved by a large majority, only to be defeated at the polls by a vote of 312,232 to 340,570.³

¹ Report of the Secretary of State, 1912, p. 657. The amendment also provided for excise and production taxes and for progressive inheritance and income taxes; but these must be in addition to taxes on property. Constitution, Article XII, Section 2.

² The average rate of property taxation in the state is about twelve mills on the dollar; in the larger cities it is about fifteen mills.

³ Report of Secretary of State, 1913, pp. 302, 303.

The foregoing review of past efforts to secure a more satisfactory taxation article in the constitution suggests that the people of the state are not ready to take a progressive attitude on the question of taxation. At the present time, public discussion of the tax question would seem at most to be of educational, rather than of immediately practical, value. Nevertheless, agitation for constitutional revision continues. As I write (December, 1914), the Columbus Chamber of Commerce is directing a campaign to induce the next legislature to re-submit the proposal to exempt public bonds; and during the past summer, a number of organizations under the active leadership of the Ohio State Board of Commerce initiated an amendment to the constitution which sought to provide a classified property tax, together with a narrow limitation of aggregate tax rates.¹ The proposal cannot be considered a satisfactory solution of Ohio's taxation problem. The inclusion of two such distinct projects in one amendment doubtless contributed to the decisive defeat² of the proposal at the November election, and robs the vote of significance as an indication of popular sentiment on classification.

II

Having now sketched the taxation situation as it developed under the immediate impulse of the recommendations of the commission of 1908, we may next examine Ohio's two most recent efforts to make the general property tax in fact what it is in name. I refer to tax rate limitation and centralized assessment.

¹ The text of the proposed amendment, with explanatory matter, is published in pamphlet form by the Ohio State Board of Commerce (Columbus), and may also be found in the Ohio Journal of Commerce for August 15, 1914.

² The vote on the amendment was 223,873 for and 551,760 against.

Soon after the reduction in the state levy on general property in 1902, attention was called to the rapid increase in local taxes. This increase had in fact begun somewhat earlier, altho in popular discussions it was commonly dated from 1902.¹ It was asserted that the "tax-spenders," finding their opportunity in the reduction of the state levy, were indulging in a riot of extravagance at the expense of the "tax-payers."

This view appears to me to have originated in the opposition of certain business interests to the development of special corporation taxes for the use of the state government. It is undeniably true that the development of special sources of revenue made possible the reduction of the state levy, but it by no means follows that that development was unwise, or that it was in any sense a cause of increasing expenditures. It is easy to show that the phenomenon of increasing local expenditures is not confined to Ohio,² and has other causes than official extravagance. It would, of course, be too much to claim that there has not been unwise and even

¹ The following table (compiled from the Reports of the Auditor of State) shows the per cent increases of local levies for the years specified over those of the year next preceding. For purposes of comparison, the per cent increases of state expenditures (compiled from Bogart, *Financial History of Ohio*, p. 141, and Auditor's Reports) are also given.

| Year | Per cent Increase of Local Levies | State Expenditures | Year | Per cent Increase of Local Levies | State Expenditures |
|-----------|---|-----------------------|------|---|-----------------------|
| 1898 | 0.11 % | 13.4 % | 1903 | 4.2 % | -0.7 % (Dec.) |
| 1899 | 3.2 | -7.2 (Decrease) | 1906 | 5.1 | 7.1 |
| 1900 | 2.8 | 5.1 | 1907 | 8.5 | 1.8 |
| 1901 | 4.8 | 5.6 | 1908 | 5.4 | 24.8 |
| 1902 | 6.7 | 1.5 | 1909 | 5.7 | 11.6 |
| 1903 | 6.3 | 3.2 | 1910 | 6.2 | -3.9 (Dec.) |
| 1904 | 8.5 | 11.4 | 1911 | 5.8 | 8.9 |
| 1898-1911 | 97.0 | 89.8 | | | |
| 1902-1911 | 71.5 | 81.3 | | | |

² The expenditures of 146 cities in the United States increased 86.4 per cent from 1902 to 1911. (See *Financial Statistics of Cities*, 1911, p. 17.) In the same period, local levies in Ohio increased 71.5 per cent. Local levies provide the funds for the greater part of local expenditures, and therefore indicate fairly well the trend of local expenditures. City and village levies, not including those for public schools, increased 63 per cent from 1902 to 1911, while those for other local purposes, excluding schools, increased 65.1 per cent and school levies increased 89 per cent.

corrupt expenditure, but there can be little doubt that the principal causes of increasing local expenditures are the growth of population and the emergence of new needs.

The neglect of these considerations by the active representatives of the business interests of Ohio, as well as their attitude on various projects of legislation, gives color to the view that, in their desire to limit their own tax payments, they have been led to oppose the development and extension of the functions of government, and thus, in many cases, to place themselves in opposition to social progress. Nevertheless, their demand that tax rates be limited as a means of enforcing economy in public administration met with popular favor. The supposed advertising value of low tax rates was also urged. The argument for limited rates was put on firmer ground when it was shown that the prevalent evil of under-assessment of tangible property tended to force nominally high tax rates, and thereby to discourage the return of intangible property, the escape of which, in turn, operated to keep rates high. This phase of the argument approaches the common error of many advocates of a classified property tax in believing that a low rate of taxation will of itself bring intangible property out of hiding. To many, this belief in the "coaxing" power of a low rate became the principal reason for advocacy of rate limitation, a view which received some corroboration from the fact that the leaders in the agitation for low rates had also been leaders in the effort to secure classification.¹

The approach of the first quadrennial reappraisal of real estate in 1910 was an auspicious time for the inau-

¹ It should be borne in mind that in Ohio individuals and miscellaneous corporations are required by law to declare their personal property for taxation, and that this list stands unless assessing officials can show that it is incorrect, or can persuade the taxpayer to modify it.

guration of a state-wide campaign to secure a closer observance of the constitutional rule requiring the taxation of all property at its true value in money. It was also an auspicious time to secure converts to the rate-limitation propaganda, since the argument lay on the surface that the increase of tax valuations, if unaccompanied by rate limitation, would give the "taxpayers" an opportunity greatly to increase the amount of taxes collected without incurring the political odium which commonly attaches to an increase of rates. And finally, the experience of West Virginia under legally limited rates¹ was cited as proof of the causal connection between low rates and high valuations, altho that connection obviously runs the other way.

Governor Harmon was interested in the plan, and what was practically an administration measure was introduced in the General Assembly and passed in an amended form May 10, 1910.² The title of the act is significant:

"To secure an equitable valuation of property for taxation by limiting the tax rate, limiting the power to issue bonds, removing certain penalties for improper valuation. . . ."

This act imposed no restrictions on the amount of taxes to be raised so long as the rate did not exceed ten mills on the dollar; but if the amount which could be raised by a rate of ten mills, — exclusive of additional amounts (over those levied in 1909) authorized for

¹ See T. C. Townsend, "Taxation Work in West Virginia," *State and Local Taxation*, vol. iv, pp. 165-178 (1910).

² 101 Ohio Laws, 430. The governor's recommendation is found in his Message, 1910, p. 6. The bill is described by Bogart, *American Economic Review*, vol. i, pp. 515-516. The popularity which the proposal had achieved is well illustrated by the statement of the Cleveland real estate appraisers before the Senate committee on taxation, that they had appraised realty at full value, but would enter the tax valuation at 40 per cent of full value unless the tax rate were limited. And these assessors had sworn to assess all property at its true value in money!

sinking funds or for specified emergencies, or by vote of the people, — should be less than the amount levied in 1909, plus certain percentages for years subsequent to 1910, then the rate might be increased to a maximum of fifteen mills, exclusive of levies for sinking fund and interest. Governor Harmon withheld his signature from the bill because of this elastic limit, and insisted that the amount of taxes levied in any year should be limited to that levied in 1909, and that the rate be limited to ten mills unless more should be "authorized by vote on propositions stating specifically purpose and amount."¹ The act of May 31, 1911, fortunately provided somewhat less rigid limitations. It made the levies of 1910 the norm by which future levies were to be determined. Except for emergencies or by vote of the people, levies made in 1911 might not exceed this norm; those of 1912 might exceed it by 6 per cent; those of 1913 by 9 per cent, and those of any subsequent year by twelve per cent. The levy was further restricted by limiting the tax rate to ten mills, exclusive of sinking fund and interest purposes, but this rate might be increased for emergencies or by vote of the people to a maximum of fifteen mills. Levies for service of debt were, however, still outside this limit of fifteen mills.² Levies for specific purposes were also limited and an *ex-officio* budget commission was created in each county to supervise the enforcement of the various limitations laid down in the law.

Opinion is sharply divided as to the merits of this so-called Smith one per cent law. Mayor Baker of Cleveland has publicly characterized it as "conceived in iniquity and born in sin." It has equally warm defenders. The influential *Ohio State Journal* has re-

¹ Governor's Message, Ohio Executive Documents, Pt. I, 1910, pp. 70-71.

² See below, p. 493.

peatedly referred to it editorially as "the best law ever put upon the statute books." It is impossible to give a complete and accurate statement of its results. It is quite probable that in some places extravagance has been checked, but it is even more certain that desirable expenditures have often been prevented.¹ The law seems to have borne most heavily on permanent improvements in school districts and in the larger cities, altho its full effects are doubtless not yet apparent. A number of taxing districts which had made little or no levy in 1910, because of an accumulated surplus, suffered considerable inconvenience through the limitation of levies to a percentage of the levy of 1910, rather than to a percentage of expenditures drawn from tax revenues. Careful financing in that year was thus penalized by inability legally to make adequate levies in succeeding years. Budget commissions have not infrequently been forced to disregard the law in order to enable some of the local governments to exist and transact business. Sinking funds, in particular, have been neglected. An act of 1913² relieves this situation by eliminating that limitation of total levies which referred to the 1910 levy. It also changes the constitution of the budget commission in such a way as to give to school districts and larger cities greater influence in determining tax levies.³

In some cases, the difficulties experienced under the law were aggravated by reason of the prevalent belief

¹ See the criticism of the law by Mr. A. J. Nook in Collier's, June 15, 1912, and the comment thereon by Professor Bogart, American Economic Review, vol. ii, pp. 973, 974. For the point of view of school men, see J. F. Orr, Ohio Teacher, vol. xxxiii, pp. 354-359 (March, 1913).

² 103 Ohio Laws, 552.

³ In counties where the greater part of taxable property is within cities and villages, the prosecuting attorney is displaced as a member of the commission by the solicitor of the largest city, who is *ex-officio* the legal adviser of the school board. In other counties the president or a member of the school board takes the place of the prosecuting attorney on the commission.

that levies for sinking fund and interest must come within the fifteen mills limitation. It is clear that in taxing districts heavily burdened with debt, such an interpretation might prevent highly desirable expenditures, even when the total levy was smaller in amount than the levy of 1910, as increased by the proper percentage. This interpretation was rejected by the supreme court ¹ during the legislative session of 1913, when it affirmed the decision of the lower court approving a levy in excess of fifteen mills in order to provide for debt not yet existing, but about to be contracted on authority of a vote of the people. The decision drew from Governor Cox a special message urging that the legislature remove all ambiguity in the act and restore the maximum limitation, because tax-payers had been induced to return large amounts of property for taxation at full value, on a virtual pledge of the faith of the state not to exact a rate of more than fifteen mills.² His recommendation was followed, and the law now forbids a rate in excess of fifteen mills,³ even tho it should prove impossible to provide for the barest needs of local government and also to provide for the debt.⁴ Eminent legal authority, including the attorney-general and Mayor Baker of Cleveland, hold that this absolute limitation renders the law void, since it seeks to deprive the taxing district of the power to provide for its lawful obligations;⁵ but the point has not been passed upon by the courts.

¹ *Roose v. State*, 87 Ohio State, 513. Reported without opinion.

² Governor's Message, January 29, 1913.

³ 103 Ohio Laws, 57. For the road tax in excess of this limitation, see below, p. 502.

⁴ In many cases, this contingency has been provided for, at least temporarily, by an increase in the assessed valuation of property in 1914. See below, p. 511.

⁵ See F. W. Coker, "Administration of Local Taxation in Ohio," *Annals Amer. Acad.*, May, 1913.

Notwithstanding the difficulties experienced under rate limitation, it has been proposed to write the ten mill limit into the fundamental law. The administration has at times lent a sympathetic ear to the suggestion, but an initiated amendment to the constitution, which proposed a more rigid limitation of the tax rate than the state has yet tried, was defeated at the November election. The proposed amendment also provided for a classified property tax; if rate limitation could have been voted on separately, it seems not unlikely that it would have been approved.

While the influence of the Smith law on expenditures is a mooted question, it is possible to speak much more definitely of its influence in inducing the voluntary return of property which under the higher rates had escaped taxation. It must be remembered, however, that the agitation in favor of more honest returns and truer valuations of property, which was described above,¹ affected assessing officials as well as tax-payers; in particular the work of the appointive city boards of review showed the effect of this stimulus. An increase in assessed valuation may accordingly reflect heightened administrative efficiency as well as the "coaxing" power of low rates.²

We may take as the basis of our comparison the assessed valuation of property as it stood in 1910. The tax limit act of 1910 became effective January 1, 1911, and therefore had no effect on the assessment of personalty in 1910, while the real estate appraisal of 1910 did not become effective as a basis for tax levies until 1911. When property was being appraised in 1911, however, not only was the campaign for listing at true value

¹ See p. 501.

² It should be added that the law indemnified "tax-dodgers" for past sins by enacting that penalties for evasion should not go back of 1911. 102 Ohio Laws, 266, Section 2.

renewed and the rate limitation act in force, but it was also apparent that the legislature would soon impose still further restrictions on the tax rate. Moreover, the assessment of public utilities and the equalization of the valuation of bank shares and of real estate was now entrusted to the tax commission. The combined result of these forces was a marked increase in the amount and valuation of all kinds of property on the tax duplicate. The assessments fixed in 1912 and 1913 are, however, a fairer test, because the tax limit law was then better understood. The subjoined table ¹ shows the percentile increases in the assessed valuation of various kinds of property over the valuations of 1910:

¹ Tables I and II are derived from the following figures compiled from the Reports of the Auditor of State for 1910-12, and of the Tax Commission for 1910-13. The figures are not in entire agreement. I have used those given by the commission for public utilities and for banks in 1910, altho this figure may include bank realty. The figures for miscellaneous corporations, 1910-12, are arrived at by subtracting the valuations taken for banks and utilities from the amounts for incorporated companies. All intangible property of corporations which is separately stated by the auditor has been assigned to miscellaneous corporations. Finally, I have felt warranted in increasing the 1910 total for corporate personalty by the amount of the discrepancy in the auditor's statements.

PROPERTY VALUATIONS BY SPECIFIED CLASSES, 1910-1913
(Amounts in millions of dollars)

| Class of Property | 1910 | 1911 | 1912 | 1913 |
|--|-------------------|---------|---------|---------|
| Personal Property | | | | |
| Corporate Personalty..... | 466.9 | 1,383.2 | 1,535.3 | 1,698.2 |
| Banks | 80.7 | 145.8 | 147.3 | 184.2 |
| Public Utilities | 226.2 | 912.9 | 994.0 | 1,058.2 |
| Miscellaneous | 160.0 | 324.5 | 394.0 | 455.8 |
| Tangible | } Not separable } | 260.1 | 319.1 | 394.0 |
| Intangible | | 64.4 | 74.9 | 61.8 |
| Personalty of Individuals | 360.5 | 547.0 | 608.9 | 632.3 |
| Tangible | 220.8 | 361.0 | 375.0 | 392.5 |
| Intangible | 139.7 | 186.0 | 231.9 | 239.8 |
| Total Intangible Personalty | (7) | 250.4 | 306.8 | 301.5 |
| Total Personalty (as in Auditor's "Table VI") | 789.6 | 1,930.2 | 2,142.1 | 2,330.5 |
| Discrepancies | 37.8 | -2.3 | 3.3 | -30.4 |
| Personalty on Duplicate | 827.4 | 1,927.9 | 2,145.4 | 2,300.1 |
| Real Estate | 1,656.9 | 4,273.4 | 4,333.7 | 4,419.0 |
| Grand Duplicate | 2,484.3 | 6,201.3 | 6,481.1 | 6,719.1 |

TABLE I

PER CENT INCREASES IN PROPERTY VALUATIONS OVER 1910

| Class of Property | Per cent Increase | | |
|-------------------------------|-------------------|------|------|
| | 1911 | 1912 | 1913 |
| Real Estate | 158 | 162 | 167 |
| Personal Property | 133 | 159 | 178 |
| Corporate Personalty | 196 | 229 | 264 |
| Banks | 80 | 82 | 128 |
| Public Utilities | 304 | 339 | 368 |
| Miscellaneous | 103 | 146 | 185 |
| Personalty of Individuals ... | 52 | 68 | 62 |
| Tangible | 63 | 70 | 56 |
| Intangible | 33 | 66 | 72 |
| All Property | 149 | 161 | 170 |

It is apparent from the above table that the most noteworthy increases in taxable valuations have occurred in those fields in which the influence of the state tax commission has been strongest.¹ In other words, the great additions to the grand duplicate of the state in the three years following 1910 are for the most part due to central assessment or equalization of the valuations of banks, public utilities and real estate,² rather than to fuller returns of their property by tax-payers under the inducement of limited rates. Even in those cases where the assessment is based directly on the declaration of the tax-payer (individuals and miscellaneous corporations), improved assessment work, as previously noted, has contributed to the increase of valuations. Altho relatively much less than in the case of assessments definitely fixed by the tax commission, the increases in the valuations returned to county auditors and local assessors are yet considerable; within the three years

¹ The discrepancies between the reports of the auditor and tax commission make it seem not improbable that these increases are too low in the case of banks. But the classification of corporate property is necessarily somewhat provisional.

² The original valuation of real estate as fixed by the assessors in 1910 showed an increase of 126 per cent over the amount then on the duplicate; to this valuation the tax commission added nearly \$500,000,000, or 25 per cent. See Report of the Tax Commission, 1911, Appendix.

the assessments charged against miscellaneous business corporations increased \$295,000,000,¹ those in respect of the tangible personalty of individuals increased \$170,000,000, and those in respect of individually-owned intangible property increased \$100,000,000.

The change in distribution of the tax burden among the owners of the various classes of property is, however, a more significant test of the results of the Smith law than the increase in valuations. Table II exhibits these changes.

TABLE II

PER CENT DISTRIBUTION OF PROPERTY, BY CLASSES, 1910-1913

| Class of Property | Per cent distribution | | | |
|---------------------------------|-----------------------|------|------|------|
| | 1910 | 1911 | 1912 | 1913 |
| Real Estate | 66.7 | 68.9 | 66.9 | 65.8 |
| Personal Property | 33.3 | 31.1 | 33.1 | 34.2 |
| Corporate Personalty .. | 18.8 | 22.3 | 23.7 | 25.3 |
| Banks | 3.2 | 2.4 | 2.3 | 2.7 |
| Public Utilities ... | 9.1 | 14.7 | 15.3 | 15.7 |
| Miscellaneous | 6.5 | 5.2 | 6.1 | 6.8 |
| Tangible } | Not Separable | 4.2 | 4.9 | 5.9 |
| Intangible ... } | | 1.0 | 1.2 | .9 |
| Personalty of Individuals | 14.5 | 8.8 | 9.4 | 9.4 |
| Tangible | 8.9 | 5.8 | 5.8 | 5.8 |
| Intangible | 5.6 | 3.0 | 3.6 | 3.6 |
| Total Intangible Personalty (?) | | 4.0 | 4.7 | 4.5 |

The significant changes in the immediate incidence of the tax burden which are brought out by the table are the increase in the share of taxes falling upon public utilities from 9.1 per cent of the total in 1910 to 15.7 per cent in 1913, and the decline in the share borne by individuals, whether in respect of the ownership of tangible or of intangible property. The increase in the

¹ The valuation of miscellaneous corporations appears to be very low, when compared with their returns to the commissioner of internal revenue. The figures are of course not strictly comparable; but miscellaneous corporations having their principal place of business in Ohio reported in 1914 a stock capitalization of \$1,679,000,000 with taxable income of \$196,500,000, which is 11.7 per cent on the capital. The property of miscellaneous corporations in Ohio was valued in 1913 at \$455,800,000.

share of taxes falling upon public utilities is to be attributed mainly to the activity of the tax commission in correcting the gross under-assessment which had prevailed prior to 1910. By contrast with the increase in the share borne by public utilities, the decrease in the share of taxes falling upon miscellaneous corporations and individuals from 21 to 16.2 per cent emphasizes the failure of self-assessment even under limited tax rates. The cherished hope that limited rates would avail to place a juster share of the burdens of government upon the owners of intangible property has been sorely disappointed, for such property has of recent years formed a smaller proportion of all property on the duplicate than ever before. The amount of taxes assessed to individuals in respect of their ownership of intangible property, computed at the average tax rate prevailing in the state, was 36 per cent less in 1912, and 27 per cent less in 1913, than in 1910, altho within the period the total amount of taxes levied upon property was increasing.

We may next inquire whether the relative decline in the valuation of the personalty of individuals and miscellaneous corporations can be viewed with satisfaction, as representing merely an equalization of assessments, or whether there continues to be under-assessment and evasion in the assessment of these classes of property.

It is, of course, not possible to estimate the amount of taxable personalty owned by individuals. The total amount of certain classes of intangible property may indeed be approximated, but its ownership is an unsolved riddle. Nevertheless, certain comparisons may be instituted which will throw some light on the relative efficiency of the assessment of different sorts of property.

The entire amount of intangible property listed for taxation by individuals and miscellaneous corporations

in 1912 was \$306,756,000, of which \$119,202,000 represented "moneys on hand or on deposit subject to order." Ten days after tax-listing day, incorporated banks in Ohio reported individual demand deposits aggregating \$357,735,000. At the same date these banks reported time deposits of \$331,321,000, and during the year building and loan associations reported deposits of \$57,468,000. On June 14, 1912, private banks reported to the comptroller demand deposits of \$11,168,000, and other deposits of \$13,088,000. Demand deposits therefore aggregated \$368,903,000; time deposits, \$401,877,000. Time deposits are, under a ruling of the attorney general, taxable as moneys if they are actually paid on demand; otherwise they are taxable as credits and may be offset by debts. Probably most of them are in strictness taxable as moneys. If so, the true amount of moneys approximated \$770,000,000.¹ A considerable portion of these deposits must have stood to the credit of public utility companies; but since it is improbable that such concerns carry any large amount of time deposits, it seems fair to conclude that their deposits could at most account for the demand deposits in excess of the amount of moneys returned. The amount of bank deposits in Ohio which were legally taxable as moneys to individuals and miscellaneous corporations must therefore have been nearly \$500,000,000.

The amount of other items of intangible property — credits and investments — cannot be so readily estimated. Mortgages may be omitted from the estimate, because they are so largely held by banking institutions and insurance companies, and are thus taxed indirectly

¹ The year 1912 is chosen for this comparison because the state department of banking issued no call in April, 1913. The returns of all classes of banks to the Comptroller of the Currency as of June 4, 1913, show deposits aggregating \$821,331,000. The amount of moneys returned by individuals and miscellaneous corporations as of April 13, 1913, was \$112,695,000, and the total amount of intangible property so returned was \$301,537,000.

if at all.¹ No doubt a considerable portion is privately owned and hence directly taxable; but the amount cannot be estimated. Neither is it possible to estimate the volume of credits arising to merchants and professional men of all classes, nor in any case, the extent to which credits are offset by *bona fide* debts. One clue to the amount of credits and investments may indeed be had: the statistics of corporate indebtedness compiled by the commissioner of internal revenue. For 1912, this amounted to \$1,320,000,000.² Some of this indebtedness is of course owned outside the state, and hence not taxable in Ohio; but in view of the great wealth of the state, it seems probable that this amount is more than offset by the indebtedness of foreign corporations owing to residents of Ohio. Some part of the debt is, again, not worth par. But when every allowance is made, it is evident that here is a vast mass of credits and investments legally taxable in Ohio, but actually untaxed.

This attempt to estimate the amount of intangible property in Ohio takes no account of taxable stocks of foreign corporations,³ nor mortgages, nor credits other than those owing by banking and other corporations in Ohio, not all of which can be reasonably supposed to have been offset by debts. In view of these omissions and of the large volume of bank deposits and corporate indebtedness, it seems unlikely that more than a fifth or a sixth of the amount of intangible property legally taxable to individuals and miscellaneous corporations

¹ Banks are taxed on a valuation of their stock, in the name of the shareholders; building and loan associations are exempt from taxation on their mortgages, and domestic insurance companies commonly invest their legal reserve in mortgages, and may then deduct their reserve from their mortgages for purposes of taxation. General Code of Ohio, Sections 5404, 5411, 5412, 9357 and 9675.

² Report of the Commissioner of Internal Revenue, 1912, pp. 81-84.

³ The shares of foreign corporations two-thirds of whose property is taxed in the state are, under certain further conditions, exempt from taxation in Ohio. The shares of all domestic corporations are exempt. General Code, Section 192.

was actually so taxed.¹ The inadequacy of the assessment of intangible property is all the more apparent when contrasted with the assessment of real estate and the property of public utilities, both of which seem to be on the tax duplicate at substantially their true value in money. For example, the average value per acre of farm realty fixed at the quadrennial appraisal of 1910-11 was \$67.86, which compares with \$68.62, the value found by the census in 1910.²

The experience of Ohio has thus demonstrated the possibility of vastly improving the assessment, even of the more easily concealed sorts of property, under a listing system administered by locally elected assessors, supplemented by moderately limited tax rates. But it has equally demonstrated the futility of relying on that system to secure even reasonably complete returns of intangible property while the tax rate remains in the neighborhood of one or one and a half per cent. Moreover, in view of the constant expansion of public expenditure, under the stress of growing population and of even more rapidly growing demands upon the public service, and in view also of the enforced dependence of the local governments of the state upon a uniform tax on general property as their chief source of revenue, there can be little hope of any material reduction in the tax rate.

Already the heavy burden of debt charges and the increasing demands upon government threaten to break down the limitations imposed by the Smith law. A list has been compiled of thirty-six municipalities,

¹ In its report for 1911 (p. 6) the tax commission holds that the amount of taxable intangible property in the state is commonly over-estimated. The only evidence offered in support of this conclusion is a reference to the extent of the exemption of securities and an assertion that inventories of estates under probate indicate that a majority of residents invest in non-taxable securities or in tangible property.

² Report of Auditor of State, 1911, p. 593; Census, 1910, vol. vii, p. 307.

including four of the larger cities, whose annual payments for interest and sinking fund purposes consume from 40 to 71 per cent of their gross tax revenue.¹ Perhaps the most striking illustration of increasing demands upon government is seen in an act of 1913, which compels a levy of one-half mill upon each dollar of taxable property in each county, the proceeds to be used for the construction and maintenance of market roads.² This levy is superior to all limitations upon the tax rate, and the legal maximum rate is therefore now fifteen and one-half mills. Other departures from the Smith law grew out of the disastrous floods which visited large areas of Ohio in the spring of 1913, and necessitated large emergency expenditures for repair and reconstruction of roads, bridges and other public improvements. Public authorities were at once authorized to borrow money for these purposes and to levy taxes for interest and sinking fund payments without regard to existing limitations upon the borrowing power or upon the tax rate.³

The pressure upon the revenues from property taxes has, moreover, been somewhat augmented by the reduction in the revenues from the liquor traffic under the constitutional amendment adopted in 1912,⁴ which limits the number of saloons to one for each five hundred of the population. This had the effect of reducing the number of saloons in the forty-three "wet" counties of the state from 8,485 to 5,523.⁵ The excise tax on saloons is \$1,000; so that the revenue of the state and

¹ Governor's Message, July 20, 1914.

² 103 Ohio Laws, 155, amended by 102 Ohio Laws, 862. This act followed hard upon the defeat of a proposed constitutional amendment in 1912, which would have permitted the issuance of \$50,000,000 of bonds for similar purposes.

³ 103 Ohio Laws, 141, amended by 103 Ohio Laws, 780.

⁴ Section 9 of Article XV, Constitution of Ohio.

⁵ Statement by Auditor of State to press, April 29, 1914.

its subdivisions from this source declined \$2,962,000.¹ Of this loss of revenue, more than \$1,500,000 fell upon the eight counties containing the largest cities of the state (those having over 50,000 population in 1910).² So precarious had the financial condition of the cities become by last spring, that a commission was created to investigate the subject,³ altho hopes are entertained that the difficulty will be relieved by the improvement in the assessment of property, which is next to be discussed.

III

The recommendation by the constitutional convention and the adoption by the people of the amendment re-enacting the uniform rule and restoring the tax upon municipal bonds⁴ was quite naturally interpreted by the tax commission as a mandate from the people to draft a bill which should not only provide the administrative machinery believed to be necessary to secure an efficient assessment of property, but should so revise the definitions of taxable property and the rules of valuation as to conform to the commission's idea of a general property tax, and include property and values now untaxed. These ideas were submitted to the governor and assembly in the form of a bill with explanatory notes.⁵

¹ Since the revenue from the liquor traffic is divided among state, county, and city or township in the ratio of 3, 2, and 5, local liquor revenues declined more than \$2,000,000. The loss of revenue to the state was compensated by certain fees payable to the state liquor license board.

² The estimates of revenue are based upon statements given to the press. The total revenue from the liquor traffic is likely to be somewhat increased under the "home rule" amendment adopted November, 1914, which substitutes local option for county option on the question of saloons. But this can hardly increase the revenues of the larger cities, which were already "wet."

³ 104 Ohio Laws, 192. The commission is to report in December, 1914.

⁴ See above, p. 486.

⁵ Recommendations of the Tax Commission of Ohio. Columbus, February 20, 1913. P. 123.

The bill proposed to make changes (1) in the administrative machinery, (2) in the definition of taxable property and the rules of valuation and situs, and (3) in the provisions for the collection of taxes. Since the collection of taxes is a phase of tax administration quite distinct in interest from the principles of taxation and the assessment machinery intended to enforce the principles, it may be passed over in this paper.¹

Altho the sections of the bill which proposed to change the definition of taxable property and the rules of valuation did not receive legislative sanction, it seems worth while briefly to discuss them because they show what measures the state may be driven to adopt, by the pressure for more revenue, if it adheres to the general property tax and to rate limitation. The spirit of the bill is well suggested by the definition of the term "personal property" to include

"every thing, interest, right or privilege, all and singular, of whatever kind, name, nature or description, being the subject of ownership, which the law may define or the court interpret, declare or hold to be property, whether animate or inanimate, tangible or intangible, corporeal or incorporeal, other than and not forming part of a parcel of real property, as defined in this chapter. . . ."

Other sections of the bill define with considerable particularity various specific kinds of property. Mortgages are defined as money loaned by residents, secured by lien on real estate without the state; money loaned by residents or non-residents and secured by lien upon real estate within the state; and all sums owing to residents or non-residents, secured by lien on any real or personal property within the state and belonging to any corporation or public utility. Mortgages and bonds secured by lien on property within the state could thus be inevitably taxed, wherever owned, by making the tax a lien on

¹ This part of the commission's proposed bill was introduced in the Senate by Mr. Haas, but did not come to a vote.

the mortgaged property; but no deduction from the valuation of the mortgaged property was contemplated, as is the usual practice where mortgages are taxed where the encumbered property is located.

It is obvious that the adoption of this proposal would result in a much more flagrant case of double taxation of mortgages than the present system. Nor does it seem likely that such a plan would successfully run the gauntlet of the federal courts. In the leading case of *State Tax on Foreign-held Bonds*, arising in Pennsylvania, the court held that bonds owned by non-residents, altho secured by a mortgage upon property situated in the state, are property beyond its jurisdiction. In explanation, the court remarked that in Pennsylvania, a mortgage, tho in the form of a conveyance, is a mere security for a debt and *transfers no estate* in the mortgaged premises.¹ In essential harmony with the *Foreign-held Bonds* case, the supreme court has since explicitly held that due process of law is observed and equal protection afforded, where the mortgage is taxed as land, wherever owned, and the mortgagor is permitted to deduct the mortgage from the value of his property.² The tax commission of Ohio expressly refused to regard a mortgage as an interest in real estate: to do so would imply the right of the mortgagor to deduct the mortgage debt from the value of his property for purposes of taxation.

Several later cases have upheld the right of a state to tax credits belonging to non-residents when those credits are in the hands of a resident agent, or arise from a regu-

¹ 15 Wallace, 300.

² *Savings and Loan Society v. Multnomah County*, 169 U. S. 421. Apparently in the effort to justify the Oregon legislature in regarding a mortgage as land, the court rejected its earlier interpretation of the Pennsylvania law as to the character of a mortgage there. See also Goodnow, "Congressional Regulation of State Taxation," *Political Science Quarterly*, vol. xxviii, pp. 405, esp. 412, 413 (September, 1913).

lar business carried on in the state.¹ The non-resident investor in the mortgage bonds of Ohio corporations or in mortgages on Ohio real estate will not ordinarily fall within these classes, and hence, it would seem, cannot be taxed by the state of Ohio except at the cost of permitting the mortgagor — whether corporation or individual — to deduct the debt from the value of the taxable property.

The present law defines credits as the excess of legal claims over *bona fide* debts. The proposed bill sought to increase the amount of taxable property by excluding mortgages from the category of legal claims, thus preventing the deduction of debts from the value of mortgages owned in arriving at their taxable value. This proposal was strongly opposed by domestic insurance companies, whose legal reserve is chiefly invested in mortgages and is therefore practically exempt from taxation under the law permitting the reserve to be regarded as a debt for purposes of taxation.² It was further proposed to confine the deduction of debts to those owing to residents.

The bill proposed also to tax the shares of all corporations at full value unless the entire corporate property was taxed in the state,³ but this proposal occasioned such a storm of protest that the commission so far yielded as to propose (in the bill as introduced in the house) to tax such shares in that proportion of their value which the

¹ *New Orleans v. Stempel*, 175 U. S. 309; *Bristol v. Washington County*, 177 U. S. 133; *Metropolitan Life Insurance Company v. New Orleans*, 205 U. S. 395.

² Section 9357, General Code of Ohio.

³ It had been the policy of the state since 1846 to exempt from taxation the shares of corporations all of whose property was taxed within the state. Acts of 1900 and 1902 exempted, under certain conditions, the shares of foreign corporations at least two-thirds of whose property was taxed within the state, and an act of 1904 exempted the shares of all domestic corporations. The last mentioned act would appear to be clearly unconstitutional, while the constitutionality of the act of 1902 has been questioned by high authority. See Report of the Honorary Tax Commission, 1908, p. 13, and Report of the Tax Commission, 1911, p. 5.

value of the property not taxed in Ohio bears to the value of the entire corporate property. Furthermore, the bill defined the "true value in money" of personal property as its "value for the purpose of sale, income or use," and particularly provides that "a mercantile, manufacturing or other plant, or any business of any kind . . . shall be listed and valued as a going concern."¹

Several provisions of the bill looked to the strengthening of the powers of assessing officials in the discovery of taxable property. The powers of county auditors in attempting to discover concealed property had long been inquisitorial in a high degree;² the chief innovation in the proposed bill consisted in giving to the assessor, rather than to the assessed, the privilege and duty of placing the valuation on the property listed. The effect of this would be to place upon the tax-payer the burden of showing that the assessor's valuation was incorrect; whereas the burden now lies with the state to overthrow the tax-payer's valuation.³

The legislature of 1913 was strongly Democratic, and the administration had pledged itself to a large legislative program; so that it was altogether unlikely that so comprehensive and important a bill could be passed without active administrative support. The strength

¹ Altho this provision was not enacted into law, the tax commission, under its new power to prescribe rules and regulations, attempted to put it into effect, but was prevented from so doing, in the case of general business corporations, by a decision of the court holding that the law does not justify the making of any distinction between the assessment of the personal property of an individual and a corporation, except such as may be engaged in operating public utilities.

² It was under these powers that the practice of employing private inquisitors grew up and was later authorized by formal enactment. See Carver, "The Tax Inquisitor System in Ohio," *Economic Studies*, vol. iii, pp. 167-212 (1898); also Bogart, *Financial History of Ohio*, pp. 219, 239-242.

³ There may seem to be some doubt as to the accuracy of this statement in view of the language of the act of 1913, which provides that the assessor shall "list and value" property for taxation. But the sections governing the listing and valuing of property were not changed by that act, and the tax commission seems to have considered their change essential to its plan. See *Recommendations*, pp. 57, 58.

of the opposition to various features of the bill, as well as their intrinsic unsatisfactoriness, led the administration to withhold its support, altho it favored a bill revising the administrative machinery of the tax system and intimated that a more thoro going revision of the methods of taxation might be undertaken at a special session of the legislature, to be convened in 1914.

In the legislative session of 1911, there had been introduced a bill providing for a system of appointive county assessors,¹ which failed of passage through disagreement between House and Senate as to the appointive power. This bill was the pattern for the administrative sections of the commission's bill, which were now redrafted and after some amendments became the so-called Warnes law of May 6, 1913.²

The act constitutes each county in the state an assessment district, and provides that the governor shall appoint an assessor in each of the smaller districts and a board of two assessors in each district which contained at least 65,000 inhabitants at the last preceding federal census.³ The assessor's tenure of office is indefinite. In each district there is created a board of complaints, having three members appointed by the tax commission with the consent of the governor for overlapping terms of three years. Both assessors and members of boards of complaints are removable by the tax commission with the consent of the governor. These officers are not within the classified civil service, being appointed by, or with the consent of, the governor;⁴ but all their subordinates are under civil service rules.

¹ H. B. 395, by Mr. Edwards. Similar measures had been recommended by Governor Foraker in his messages of April 6, 1886, and January 4, 1887, and by the special commission of 1893. See Report, pp. 45, 46, 71-77.

² 103 Ohio Laws, 786.

³ There are fourteen such counties in a total of eighty-eight.

⁴ Section 8 of the Civil Service Act, 103 Ohio Laws, 698. The act does not make entirely clear the position of members of boards of complaints, but it has been construed

The powers of these officers are comprehended in the statement that they shall, "under the direction and supervision of the tax commission," assess for taxation all real and personal property in their respective districts, except the property of public utilities, which is assessed by the tax commission. The powers of the former elective assessors, appointive city boards of review, and *ex-officio* county boards of review and equalization, and the powers of county auditors in the assessment of property, are transferred by blanket provisions to the newly created district assessors and boards of complaint.

The authority of the tax commission is seen not only in the general provision that it shall "direct and supervise" the assessment of real and personal property, but in various detailed provisions defining and explaining that authority. The commission is empowered to prescribe forms and to make and enforce rules and regulations for the assessment and valuation of property for taxation. The salaries of assessors and members of boards of complaints are to be fixed within specified limits by the commission with the consent of the governor. The number and terms of service of all subordinates and employees of assessors and boards of complaints are to be fixed by the commission, which has also the power of approval of the salaries of such subordinates. The commission fixes the time within which boards of complaints must complete their work.¹ Appeals lie from the board of complaints to the tax commission, which may, however, make an independent investigation of the matter in complaint.² Assessors

as stated in the text by the attorney-general in Opinion No. 899, dated April 29, 1914. See also Opinion No. 661, December 27, 1913.

¹ Members are paid on a *per diem* basis.

² The commission has always possessed the power to make changes in the valuations of real or personal property. See 101 Ohio Laws, 399, Section 81.

and boards of complaints are required to perform such other duties as the commission may direct, including attendance at conferences with the commission or with other assessors and members of boards of complaints. The power of the commission as a state board of equalization is extended to the annual equalization of the valuations of both real and personal property,¹ and to this end the commission may increase or decrease the valuation of the real or personal property, or of any class of either in any taxing district or division of a municipal corporation, or may order a re-assessment of any such property.²

Under the former law, boards of review and equalization might add omitted property and change assessors' valuations on their own motion, and were to that extent boards of original assessment. It was the intention of the Warnes bill to concentrate authority and responsibility; and in harmony with this idea the board of complaints was made strictly what its name implies. But in the haste of the last few days of the session an amendment was offered and accepted which gives the board power to make changes in valuations "upon its own initiative," a power which is entirely inconsistent with the provisions of other sections, and which might operate to impair the quality of the assessor's work through the opportunity thus afforded to throw the responsibility for difficult or unwelcome assessment work forward to the board of complaints. In its instructions to boards of complaints, the tax commission

¹ Heretofore the commission has equalized the valuations of real property quadrennially. There has been no state-wide equalization of personal property, except of bank shares and, formerly, of the property of transportation and transmission companies, now assessed by the commission.

² These provisions somewhat extend the powers of the commission under the act of 1910. See above, p. 482.

has limited their activities to reviewing complaints; but it is not certain that the courts will sustain this restriction, if brought to their attention.¹

The Warnes law, then, creates a body of assessing officials who, by reason of their tenure of office and emancipation from political obligation to the electorate, occupy a unique position in the history of the American general property tax. Moreover, the coördination of the work of the several assessors through the direction of the tax commission serves greatly to enhance the efficiency of assessment. How this was accomplished in 1914 is described by Governor Cox in his message to the legislature convening in extraordinary session July 20 last. He said:

"The state commission was able to secure close coöperation between the district officials in the eighty-eight counties — something impossible except under the centralized authority plan; mortgages were copied and exchanged, lists of taxable securities, with the names and addresses of holders, were distributed, and from this source approximately \$100,000,000 of taxable values were secured. There was also an interchange of other useful information. The commission kept in constant touch with the work in the counties; district assessors required daily reports of the work from their deputies; and the district assessors reported weekly to the tax commission. In addition, three traveling examiners inspected the work, for the purpose of verifying reports and to give assistance. In this manner the commission was able to secure uniformity in the assessment of the several classes of personal property in the various counties."

If the new law is to be judged by its immediate effect on property valuations, it must be unequivocally approved. As early as midsummer, the unrevised returns of assessors indicated an increase of approximately one billion dollars in the grand duplicate, and on this showing the administration ventured to cut the tax rate for

¹ See above, p. 507, note, for a case in which the commission's instructions were overruled.

state purposes in half.¹ A better test of the law's results, however, will be found in the relative increases in the valuation of different classes of property. These increases are presented in the following table, together with the per cent distribution of property in 1913 and 1914.²

TABLE III

PROPERTY VALUATIONS BY SPECIFIED CLASSES, 1914,
PER CENT INCREASES OVER VALUATIONS OF 1913, AND PER CENT
DISTRIBUTION OF PROPERTY, 1913 AND 1914
(Amounts in millions)

| Class of Property | Valuations | Per cent Increase Over 1913 | Per cent Distribution | |
|--------------------------------|------------|-----------------------------------|--------------------------|------|
| | | | 1913 | 1914 |
| Real Estate | \$4,606.0 | 4.2 | 65.8 | 60.8 |
| Personal Property | 2,976.4 | 28.4 | 34.2 | 39.2 |
| Corporate Personalty | 1,840.9 | 8.4 | 25.3 | 24.3 |
| Banks | 161.8 | -12.2 | 2.7 | 2.1 |
| Public Utilities | 1,096.1 | 3.6 | 15.7 | 14.5 |
| Miscellaneous | 583.0 | 27.9 | 6.8 | 7.7 |
| Tangible | 446.3 | 13.3 | 5.9 | 5.9 |
| Intangible | 136.7 | 121.2 | .9 | 1.8 |
| Personalty of Individuals | 1,135.5 | 79.6 | 9.4 | 14.9 |
| Tangible | 464.1 | 18.2 | 5.8 | 6.1 |
| Intangible | 671.4 | 180.0 | 3.6 | 8.8 |
| Total Intangible Personalty... | 808.1 | 168.0 | 4.5 | 10.7 |
| Grand Duplicate | 7,582.4 | 12.8 | | |

The most significant fact brought out by the table is that the principal increases have occurred in those classes of property whose valuation has heretofore been determined almost exclusively by the owner's return, —

¹ This was one of three laws enacted at the extraordinary session of the legislature which convened and adjourned July 20, 1914. The original and revised levies for the several funds are appended:

| | Original Levy | Revised Levy |
|-------------------------|---------------|--------------|
| Sinking Fund | .0335 mills | .0025 mills |
| Common School Fund..... | .3350 " | .0550 " |
| University Fund | .0925 " | .0925 " |
| Highway Fund | .5000 " | .3000 " |
| Total | .9610 " | .4500 " |

² For furnishing me these figures in advance of publication, I am indebted to Hon. A. B. Peckinpaugh, vice-chairman of the tax commission.

the property of miscellaneous corporations and of individuals. Moreover, the improvement due to centralized assessment is shown to be most marked in the case of intangible property, the valuation of which has been increased by a round half billion dollars. For the first time in many years the share of the property tax falling upon intangible property has been materially increased.¹ What limited tax rates alone could not do has been accomplished with the assistance of centralized assessment. The assessment of intangible property is still, however, much less efficient than that of other forms of property. Less than three weeks before tax-listing day in 1914, state and national banks alone reported demand deposits of \$416,409,000, and time deposits of \$375,042,000, while the amount of moneys listed for taxation aggregated \$148,600,000 and the total valuation of intangible property was \$808,000,000. In view of these figures and of those cited above,² it can hardly be contended that more than half the taxable intangible property in the state has been reached.

Yet even this limited success of the Warnes law in enforcing the constitutional mandate that all property shall be taxed at a uniform rate is to be welcomed, tho less perhaps because it has, at least for the time, somewhat reduced inequalities among the owners of intangible property, than for other reasons. In the first place, the possibility of great improvement in assessment work has been demonstrated. This is an important step toward removing the fear of a declining revenue, which has so often stood in the way of effective tax reform in Ohio, as elsewhere.³ In the second place,

¹ Not since 1870 has intangible property formed so large a proportion of all property on the grand duplicate.

² Cf. p. 500.

³ It will be recalled that an ineffective system of administration stood in the way of the success of the Iowa five mills tax on intangible property. See Brindley, *State and Local Taxation*, vol. vi, pp. 407-418.

the results of the first year's operation of the new law emphasize anew the difficulty of securing even a reasonably complete assessment of intangible property so long as we attempt to tax it uniformly with tangible property, at a rate which — even tho limited — still takes one-fourth or more of the income from investments. For it is not to be expected that the assessments of subsequent years will show much improvement over those of 1914. The new broom has probably swept about as clean as it will sweep.

It is reported by brokers that the unexpected resourcefulness of the tax commission in procuring lists of stockholders in foreign corporations has already resulted in a considerable shifting of investments to those which are not taxable in Ohio. There are many such securities: the stock of all Ohio corporations, the stock of foreign corporations two-thirds of whose property is taxed within the state,¹ and bonds of Ohio municipalities issued prior to 1913. For the investor who desires to avoid stocks and yet gain a higher rate of income than municipal bonds ordinarily yield, and who does not scruple to conceal his investments, there are ample opportunities in fields of which there is no public record, such as coupon bonds and promissory notes. Nor is it ordinarily difficult to evade taxation by investing in foreign mortgages, or through non-resident investment agents, or by a number of less common devices. In sum, the door is by no means closed to the tax-dodger, nor is the tax rate in Ohio low enough (if indeed any rate is low enough) to remove the inducement to evasion. This is merely to say that the assessment of intangible property under the existing system remains

¹ In practice, this means that the stock of most foreign corporations doing business in the state is deemed to be non-taxable. See Report of the Tax Commission, 1911, p. 6. But the power of the tax commission is now ample to determine the question of taxability, and to place taxable stocks on the list.

and must remain largely haphazard. Concealment and evasion have been made less easy for some classes of intangible property, but they are not difficult in cases where "information at the source" is not an available method.¹

It is to be remembered that under the lax assessment methods previously obtaining, the tax on intangible property was at most only partially and very irregularly shifted. More rigorous assessment will, therefore, by reducing the net yield of investments, lead to the withdrawal of investors from those fields in which the tax can be most unfailingly assessed, as has been noticed in the case of foreign corporation stocks. The reduction in the supply of capital in these fields will then tend to increase the rate of return to capital which still braves the tax-gatherer. To be sure, the extent of this influence depends upon the scope of the market for the taxed investments. It will be inconsiderable in the case of the stocks of large and well-known foreign corporations, but it will probably be quite important in the case of mortgage loans upon Ohio real estate. It is true that a considerable portion of such loans is made by banking institutions not directly taxable on their mortgages, but it is probable that the rate of interest paid on deposits is influenced somewhat by the fact that deposits are taxable at the full property rate as moneys or credits.² The loan rate is of course directly related to the rate of interest paid on deposits. Loans by non-residents probably have little influence in depressing the rate of interest, as might on first view be expected, both

¹ This method is specifically prohibited in the case of bank deposits generally (tho not in specific cases) by an amendment which the banking interests succeeded in attaching to the Warnes bill. (103 Ohio Laws, 786, Section 52.) A similar section in the tax commission act of 1911 was vetoed by Governor Harmon. (102 Ohio Laws, 224, Section 162.)

² Such is the view of some of the more thoughtful and well-informed of Ohio bankers. See note by the writer in *American Economic Review*, December, 1914, pp. 965, 966.

because of their limited amount and because such loans are in most instances taxable in the state of residence.

The ultimate influence of the act upon the popular attitude on the taxation of intangible property is not altogether clear. On the one hand, as interest rates on mortgage loans rise in response to more certain assessment, the argument from the purse will tend to convert into tax reformers many of those who in the past have been the staunchest defenders of the uniform rule.¹ And if, as seems likely, the proportion (if not the actual amount) of intangible property on the duplicate declines in future, attention will again be directed sharply to the intrinsic unsatisfactoriness of the general property tax. On the other hand, it is not unthinkable that these forces may only result in renewed antagonism to the "money kings" and in a determination on the part of the rural element in the legislature² to force intangible property to contribute taxes in proportion to its value. If so, the plan promulgated by the tax commission in 1913 may be revived, or yet more drastic legislation be enacted, before the dawn of a brighter day for tax reform in Ohio. But whatever the popular verdict on the uniform rule, it cannot be gainsaid that the principle of centralized assessment has amply justified itself.

IV

By way of summary, the two main conclusions which flow from Ohio's recent experience in taxation may now be restated: first, centralization is an important, if not an indispensable, aid to effective assessment, particularly of intangible property, whatever the policy

¹ That the shifting of the tax on mortgages is understood by many farmers was shown in the constitutional convention of 1912 by the proposals introduced by rural members to exempt mortgages from taxation, while continuing the tax on other forms of intangible property.

² By reason of the county system of representation, the rural population has a disproportionate voice in the legislature.

adopted for the taxation of such property may be; and second, the general property tax cannot be bolstered up into a satisfactory system by the devices of limited rates and centralized assessment.

While centralization has approved itself, the method now in vogue for the selection of district assessors and members of boards of complaints is open to serious objection. These officers appear, upon the whole, to have been well chosen; but the conditions of their appointment have created, and will perpetuate, a suspicion of partisanship. Assessing officials should be removed as far as possible from all taint of partisan bias, and to this end the law should be so amended as to bring them definitely within the classified civil service. Unfortunately, the political situation in the state hardly warrants hope of the early adoption of such an amendment. In the recent state campaign, both Republicans and Progressives denounced the system of appointive assessors as tending to the creation of a political machine; and the incoming administration is virtually pledged to make the county assessor an elective officer, if not to restore the old system of township assessors. Such a change in the law would be particularly disappointing to those who hope to see the constitution so amended as to permit a radical revision of the tax system; for the success of such a revision will depend in no small measure on the experience and efficiency of the assessing corps. Moreover, it would be unwise to repeal the new law before it has had a fair trial, and return to a system of proved inefficiency. It is reported, however, that the governor-elect approves of central control of assessors, whether the assessors be elected or appointed. There is thus ground for hope that the state may retain most, if not all, of the advantages of the present system.¹

¹ The Republican majority in the legislature now in session (April, 1915) planned to transfer to county auditors the powers of district assessors pending the re-establishment

Perhaps in no other state has the theory of the general property tax been more vigorously defended and the legislation supposed to be alone necessary for the successful operation of the tax been more cheerfully provided; yet the result is at best a partial and, in all probability, a temporary success. At present, public opinion still insists upon the enforcement of the uniform rule.¹ Nevertheless, it seems appropriate to conclude this paper with a suggestion of the lines along which a satisfactory reform of the property tax should proceed.

In view of the fact that the proposal to classify property for purposes of taxation has been so widely discussed in the state, it seems fairly certain that the first step in reform will be the adoption of a constitutional amendment providing for some degree of classification and according a low rate, rather than exemption, to intangible property. Advocates of classification in the state have seldom gone so far as to suggest the administrative measures by which the taxation of intangible property could be made effective; for the most part, they seem to have assumed that a rate of three or four mills would result in a satisfactory voluntary return of such property. The experience of Ohio as traced in this paper affords little warrant for such an assumption, but rather makes it clear that self-assessment should be avoided wherever possible. Intangible property should be reached through the taxation of the particular wealth which underlies it and gives it value, wherever that wealth can readily and certainly be identified. For example, corporations whose entire property is in the

of the system of elective assessors. On the failure of this bill, the tax commission, at the request of the governor, removed all the assessors and the governor has made new appointments.

¹ As I write, it is reported in the press that the tax commission will recommend that tax rates be further limited and that assessors be given greater power in the effort to secure a fuller assessment of intangible property.

state should be taxed on a valuation which takes full account of the value of stocks and bonds, and these securities should then be exempted in the hands of their holders.¹ Similarly, real estate mortgages should be exempted, or taxed as an interest in real estate. In principle, moneys and credits should also be exempted; but since the dependence of their value on that of some particular wealth is less readily seen than is the case with securities, it would probably prove to be politically expedient to tax them at a low rate — say three mills. As in Minnesota, this rate should be accompanied with the abolition of that most fruitful source of perjury — the privilege of deducting debts from credits. The revenue should further be safeguarded by imposing the tax at the source where practicable — for example, by taxing all classes of banks on their average deposits, and granting them the privilege of deducting the tax from the depositor's account.

There is stronger ground of principle for the taxation at low rates of investments representing in whole or part wealth outside the state. The obligation to pay taxes where one resides is not to be questioned in a federal state.² In the case of most foreign investments, reliance would have to be placed on personal declarations, under such restraints as careful administration may provide. In the case of investments in the stock of corporations chartered or doing business in the state, however, it would be practicable to impose the tax at the source; it should be levied on that proportion of the value of the shares which represents property owned or

¹ Such a plan would, indeed, at least for a time, increase the burden falling upon stockholders, but in the long run, interest rates on bonds would be so adjusted as to correct this. In any event, the plan proposed seems better than the present haphazard assessment of corporate bonds.

² See Bullock, "The Taxation of Intangible Property," *State and Local Taxation*, vol. ii, pp. 127-137, 164, 165; Taussig, *Principles of Economics*, vol. ii, pp. 539-541, and Seligman, *Essays in Taxation*, 1st ed., pp. 110-114.

business done outside the state.¹ This proportion could readily be determined by the tax commission, and could be applied as well to the bonds of foreign corporations, the assessment of which would, however, have to depend mainly on personal declaration. It must be admitted that political expediency might force the imposition of similar taxes on domestic investments; but such taxes would be more equitable as among the owners of intangible property, and hence less objectionable, than those now imposed by the law.

For such a system of taxation there is much to be said on both theoretical and practical grounds. To a large extent, it will do away with the double taxation of property and wealth.² Even where double taxation is not abolished, it will at least be mitigated by the lower rates on intangible property, and by the nearer approach to universality which may be expected to result from low rates and competent administration. There will then be less warrant for the cry of "unjust" double taxation, and the ethics of tax-paying will tend to reach a higher plane. Finally, the revenue results of such a system are not to be despised. From bank deposits alone, a tax of three mills would yield in the neighborhood of \$2,500,000, or about two-thirds the yield of all taxes levied upon intangible property in Ohio in 1912 or 1913. The proposal made for the taxation of the securities of foreign corporations would not effect any material permanent reduction in the revenue from security holdings in foreign corporations, for the amount of such securities heretofore taxed has been relatively

¹ In the light of the principle of "economic allegiance," the present exemption of the shares of domestic corporations, regardless of the location and taxation of their property, is indefensible. Nor can the franchise tax of three-twentieths of one per cent on the capital stock of corporations be held fairly to offset this exemption.

² The writer believes that the distinction between the terms "property" and "wealth" should be strictly observed. Such phrases as "intangible wealth" have no meaning with reference to the taxation of moneys, credits and investments.

small. It does not seem extravagant to expect that under such a system as is here proposed, the yield from intangible property would be greater than can be permanently drawn from it under even the best administration of the general property tax.

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STATISTICAL INDICES OF BUSINESS CONDITIONS

SUMMARY

Importance of studying statistical indices of business conditions, 522. — I. *Available Statistics*: Imports of merchandise, 524. — Exports of merchandise, 525. — Immigration, 526. — Bank clearings, 527. — Railroad gross earnings, 528. — Idle cars, 529. — New building, 530. — Commodity prices, 531. — Business failures, 531. — Stock market, 532. — Money rates, 534. — Bank loans, 534. — Pig iron, 535. — Copper, 536. — Print cloth and cloth margins, 537. — Silk, 539. — Tin, 539. — Hides and leather, 540. — Crops, 540. — Other items, 541. — II. *Some Methods of Business Forecasting*: Babson's Composite Plot, 543. — Brookmire's system, 552. — III. *Suggested Method of Obtaining Indices*: explanation, 554. — Need of more comprehensive statistical records, 562.

It is the purpose of this article to discuss the use of statistics for indicating the trend of business conditions. The first task is to ascertain what available statistics are symptomatic of business changes; the second to examine critically some of the methods by which statistics are being used at the present time for business forecasting; and the third to suggest an improved method. The subject is large and the work is still in an experimental stage; hence all conclusions must be considered tentative.

This subject obviously is not merely academic, but of large practical interest. Bankers, financiers, and the heads of manufacturing and mercantile enterprises must constantly study present conditions and future prospects. Many manufacturers, for example, buy raw materials and start manufacturing operations months before the finished goods are placed upon the market.

Plans must be made and production regulated according to the conditions which such producers expect to encounter at a later time. If they err in judgment, they are placed at a disadvantage which may prove serious. The maladjustment which occurs during a period of crisis may be disastrous. If manufacturers and merchants can be forewarned, fewer will be caught unawares and the severity of the shocks will be alleviated.

It is now generally agreed by students of the subject that the ups and downs of business prosperity are due to deep-seated influences, and business men are more and more giving up the long persisting notion that changes in business conditions are caused primarily by tariff acts, political happenings, or court decisions. More attention is being given to the symptomatic statistics currently published in the financial journals, trade publications, and daily papers. Some executives have statistical reports carefully prepared for their own businesses in order to make comparisons with previous periods and with the external statistics for other industries and trade.

The published statistics, altho inadequate for a complete analysis, furnish ample material for experimentation. Each set of statistics, however, requires careful examination; some are worthless. Moreover, of those statistics which appear to be reliable barometers of business changes, only those which are available daily, weekly, or monthly can ordinarily be used. A business man wishes current information; for him statistics which are a year old are more or less antiquated. And in studying long time fluctuations and the large trade cycles, annual figures are unsatisfactory because of the impossibility of determining to what extent the figures represent the antecedents and to what extent they represent the effects of important events happening

within the calendar or fiscal year. The annual statistics for the years 1873, 1893, and 1907, for instance, are not properly comparable in a study of crises, since the panic of 1873 began in the middle of September, that of 1893 in May, and that of 1907 in October. In the annual figures for these years the antecedents and the effects of the panics are thrown together in unequal proportions. In most instances a monthly basis of comparison seems to give the best results. With these considerations in mind we can proceed to an examination of the statistics.

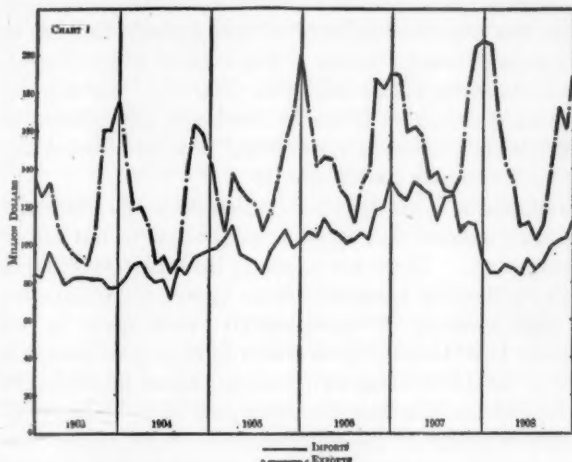
I. AVAILABLE STATISTICS

(1) *Imports of Merchandise.* The statistics for the value of merchandise imported into the United States correlate with business conditions.¹ During periods of prosperity more raw materials are bought for our manufacturing plants and the imports of finished goods for immediate consumption are also larger. During periods of depression, on the other hand, our purchases in foreign markets fall off. Altho the import statistics are affected by general changes in price level, short time comparisons can safely be made. Their most serious defect is in their susceptibility to the influence of tariff changes; but this does not destroy their worth as an index to general conditions.

In order to show the course of imports during a portion of a typical business cycle, the monthly statistics for the years 1903-08 have been plotted on Chart I. Final conclusions cannot, of course, be drawn from statistics for so short a period, but for experimental purposes these years seem to be representative. The

¹ Import and export statistics are published in the Monthly Summary of Commerce and Finance and in various financial journals.

general upward trend of the curve during the years of prosperity immediately preceding the crisis of 1907 is noteworthy. The effects of the crisis are shown in the ensuing decline. It is to be noted, also, that these statistics show a seasonal fluctuation, with a peak in March, due presumably to the importing of merchandise for the spring trade, a sag in the summer, and



another upward movement in the autumn caused by imports of merchandise for the holiday trade.

(2) *Exports of Merchandise.* For judging business conditions, the export statistics of the United States¹ are much less useful than the import statistics. The export statistics are, in themselves, less reliable because of the greater percentage of error in the returns; they are not scrutinized by the customs inspectors and there is no adequate check upon the accuracy of the exporters'

¹ The export statistics for Great Britain, on the contrary, are a particularly good index of conditions in that country, since the British manufacturers are so largely dependent upon foreign markets.

manifests. Furthermore, because of the predominance of raw materials and foodstuffs in our export trade, the volume of our exports depends largely upon conditions affecting demand from foreign countries. The movement does not necessarily indicate the strength or weakness of the domestic situation. The exports of manufactured goods tend to fall off with improvement in domestic demand and to increase during depression, when our manufacturers show their greatest interest in developing foreign trade. The course of the export trade, 1903-08, is also shown on Chart I. The marked seasonal fluctuation is due to the heavy exportation of raw cotton and other agricultural products during the late autumn and winter months.

Balance of trade statistics, which show the difference between imports and exports, seem to me to have little significance. There are so many invisible exports and imports that the balance of trade figures always involve a large element of uncertainty. How great is the foreign indebtedness upon which interest payments are due? Is the investment of foreign capital increasing or is the foreign indebtedness being paid off? What shipments of securities are being made? What transportation charges are to be paid? No record can be kept of all these transactions, which have just as much influence as the visible merchandise shipments upon foreign exchange rates and the movement of specie.

(3) *Immigration.* The statistics for immigration fluctuate in a general way with business conditions in the United States. An upward tendency was indicated, for example, during 1905, 1906, and 1907, and a marked reaction in 1908. The immigration figures are of especial interest to certain manufacturers, since they give some indication of the increase in the supply of unskilled labor. Their significance as a general index,

however, is lessened by the fact that the movement of immigrants adjusts itself only with more or less delay, according to information transmitted from this country to the foreigners before they leave their homes. The net immigration, that is the total number of immigrants less the number of emigrants, should be more significant; but the latter figures have been published only since July, 1907. A much more serious criticism of the use of immigration statistics as a business barometer is that they are influenced not only by conditions in the United States but by industrial, social, and political conditions in the countries whence the immigrants come. At best these statistics could not show a very close approximation to actual changes in business conditions in this country. At the present time, in consequence of the European war, all comparisons have become inconclusive.¹

(4) *Bank Clearings.* Because of the wide-spread custom of making payments by check, bank clearings give a fairly accurate index to the volume of business transactions. Altho influenced by general changes in prices, by bank consolidations, and by the spread of the check-using habit, bank clearings show approximately how much business is being done at any one time. As a business index, the bank clearings for the United States exclusive of New York City are more significant than the total clearings. The New York clearings, which constitute about one-half of the total clearings for the country, are so affected by the volume of speculative transactions upon the Stock Exchange that they should at least be considered separately. The clearings in other cities where stock exchanges are located are not a sufficiently large proportion of the total to necessitate

¹ Immigration statistics are currently published in numerous periodicals and also in the Monthly Summary of Commerce and Finance.

their exclusion. Bank clearings are not subject to wide fluctuations and do not indicate what is likely to take place in the future, but they do show in a general way what is taking place. The clearings statistics as reported by *Bradstreet's*, *The Commercial and Financial Chronicle*, and *Dun's Review* differ slightly in detail but approximately agree.

(5) *Railroad Gross Earnings.* Railroad traffic fluctuates with the amount of business being done in the community. As an index to the volume of traffic, since tonnage figures are not currently available,¹ railroad gross earnings are commonly used. Statistics for net earnings show the general financial condition of the roads, but are far less useful for general purposes than the gross earnings. The latter are in the same class as bank clearings, showing what is taking place but foretelling little of the future.

Because of the delay which occurs in securing reports from some of the companies, the total earnings for all the roads in the country cannot advantageously be used in studying business indices. It is necessary, therefore, to take the earnings for a representative group of roads. In the *Commercial and Financial Chronicle* statistics for the earnings of a group of roads are given monthly. These statistics are usually made up from preliminary returns and are thus, to some degree, subject to revision. The most serious difficulty however, which prevents the use, except for casual observations, of such compilations as those of the *Commercial and Financial Chronicle*, is that the make-up of the group continually changes. The number of roads included varies from month to month, yielding totals

¹ For a few years the American Railway Association has published a monthly bulletin, "Statement of Freight Car Balance and Performance," which gives, amongst other things, the ton miles of freight carried, but these bulletins appear several months late.

which usually can be compared only with the preceding month or with the corresponding month of the preceding year. Mr. Babson presents on his desk sheet a useful monthly table of the total gross earnings of ten railroads, always including figures for the same roads.

(6) *Idle Cars.* From January, 1908, to November, 1914, the American Railway Association issued semi-monthly reports on the number of idle freight cars. Since February 1, 1915, monthly reports have been issued. Altho these reports have probably been of assistance to railroad officials by furnishing a guide to traffic demands and by enabling them to secure a better balance of car supply, I am disposed to think that the statistics are much less reliable as a business index than has been commonly believed.

In the first place, the number of roads reporting has varied. On April 1, 1914, the number of roads reporting was 190; on June 1, 176; on October 1, 204; and on November 1, 192. Similar variations appear for other months. Further, in making any long time comparisons, the change in the capacity of the cars is also to be considered. But neither of these factors is so fundamental as the irregularity in the number of new cars added from year to year. The statistics for the number of freight cars idle cannot show the fluctuation in the volume of traffic and, hence, the amount of business done, when the number of cars available for service itself fluctuates irregularly. The number of idle cars depends not only upon the number actually in use, but also upon the number of new cars added and of old cars scrapped. The variations in the number of cars in service are shown by the following table, compiled from the bulletins of the American Railway Association. The wide divergencies in the number of new cars added during these years vitally affect the number of cars idle at any one time;

REVENUE FREIGHT CARS

| | Cars Owned at End of Year | Increase or Decrease Dur- ing Year | Average Number Idle Per Month | Largest Number Idle | Smallest Number Idle |
|------|---------------------------------|--|-------------------------------------|---------------------------|----------------------------|
| 1908 | 2,077,764 | + 78,843 | 273,600 | 408,900 | 104,800 |
| 1909 | 2,049,015 | - 28,749 | 187,800 | 321,800 | -4,300 ¹ |
| 1910 | 2,162,444 | +113,429 | 59,300 | 138,100 | 10,900 |
| 1911 | 2,197,399 | + 34,955 | 124,100 | 198,500 | 24,800 |
| 1912 | 2,207,516 | + 10,117 | 34,100 | 113,100 | -50,600 ¹ |
| 1913 | 2,297,818 | + 90,302 | 42,200 | 79,400 | 2,200 |

¹ Shortage.

hence, without a statement each month of additions or withdrawals, idle car statistics should be used with extreme caution. The statistics as commonly published give us little clue as to the degree of change which has taken place.

(7) *New Building.* Numerous cities now have building regulations and require that a permit be obtained from a building commissioner before construction may be commenced. A record of these permits is kept, furnishing an index to building activity. The figures, to be sure, indicate only the plans at the time that the permit is issued and do not show over how long a period the building operations will extend or what cessations of construction occur. Nevertheless they should serve roughly as a general index.

The financial papers regularly publish compilations of statistics for new building, but not in a form for continuous comparisons. *Bradstreet's*, for example, has a monthly table of new building statistics, but the number of cities included varies from month to month, and occasionally the figures for some of the large cities are omitted, thus introducing a relatively large percentage of error. For this subject Mr. Babson also has a serviceable table on his desk sheet, which gives the value of the new building permits issued in twenty selected cities.

(8) *Commodity Prices.* Prices of commodities tend to rise during periods of prosperity and to fall during periods of depression. The most accessible general index for monthly changes in commodity prices is that published by *Bradstreet's*. The index number is in the form of the "total of the prices per pound of ninety-six articles," including breadstuffs, livestock, provisions, fruits, hides and leather, textiles, coal and coke, metals, oils, naval stores, building materials, chemicals and drugs, and miscellaneous. This method of computation permits such articles as silk cloth, which is light in weight and high in price, to exercise more influence on the totals than is exercised by the bulky staple commodities. And, so far as I know, no explanation has ever been given of the methods of finding the price per pound of eggs or per pound of oil. Ninety-six pounds of such an incongruous mixture is hard to imagine.

(9) *Business Failures.* The frequency of business failures tends to vary inversely with general business conditions. During periods of prosperity bankruptcies diminish. But as soon as depression sets in, the weaker firms, which have been able to hold on because of strong business conditions, fail in greater numbers. The statistics for business failures are a particularly sensitive index and show to what extent liquidation has progressed. They aid in forming a judgment as to when business recovery is to be anticipated.

Statistics for the number and liabilities of business failures are published by both *Dun's Review* and *Bradstreet's*. The figures from these two sources differ somewhat in detail but show the same general tendencies. The statistics for the total liabilities of failures are more commonly used than the statistics for the number of failures. The liability figures, however, occasionally show a sharp increase in consequence of a

single heavy failure which, from the general point of view, does not deserve the weight thus given it. Such experiments as I have made indicate that the statistics of failures by number correlate more closely with other business indices.¹ The statistics of business failures, like so many others, show a marked seasonal fluctuation, reaching their high point during the inventory months of December and January each year.

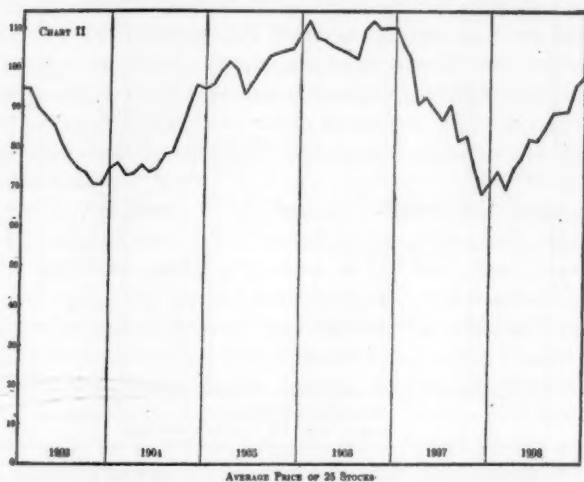
(10) *Stock Market*. Security quotations on the Stock Market fluctuate sensitively with every change and with every rumor of change in business conditions. The prices of securities rise during periods of prosperity owing to general optimism and high dividends. But when money rates begin to tighten, the stock market is one of the first indices to give warning of the coming crisis. Beginning in January, 1907, for instance, there was an almost constant decline until after the panic, as is shown upon Chart II. The curve indicates the changes in the average price of twenty-five stocks on the New York Stock Exchange.

Several stock market barometers, or indices of security prices, are published. I have used that of the *Boston Transcript*. Until the closing of the Stock Exchange in July, 1914, this barometer gave daily the changes in the average price of twenty-five stocks, including eighteen railroads, one public service company, and six industrials. These were, on the whole, well-selected and representative. The stock market index of the *Wall Street Journal* has been more commonly used for showing movements of security prices; but amongst the twelve industrials which it formerly included there was one quotation for United States Steel

¹ My tentative conclusion that the number of failures is the better index is supported also by Mr. D. R. Little, editor of *Dun's Review*, who states: "The number of failures reflects conditions more accurately than do the aggregate liabilities." *Moody's Magazine*, February, 1915, p. 79.

preferred, one for United States Steel common, one for United States Rubber preferred, and one for United States Rubber common. The weight thus given to steel and especially to rubber seems to have been unwarranted. Recently a quotation for General Motors has been substituted for United States Rubber preferred.

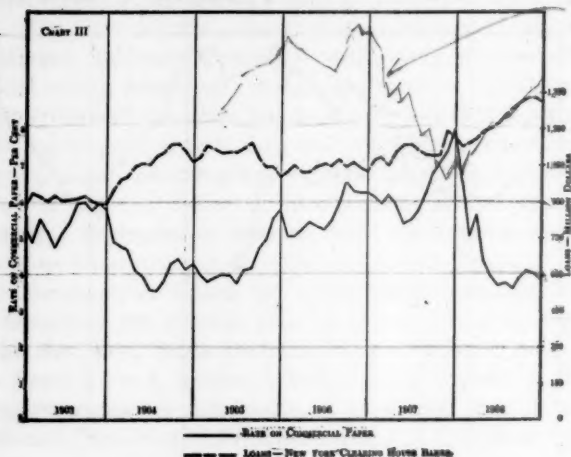
The average monthly figures which are plotted on the chart were obtained by taking an average of the Satur-



day quotations for each month. This average of the Saturday quotations varies little from an average of all the days in the month and is fully representative.

The volume of transactions upon the New York Stock Exchange is also of some value as a business index. Purely speculative influences or manipulation, however, may cause a rise or decline in the activity of the stock market, which does not correlate with actual changes in business prospects.

(11) *Money Rates.* The average rate on 60-90 day commercial paper serves as an index to money rates. The curve for money rates on Chart III has been plotted from the monthly averages given by Professor Mitchell in his *Business Cycles*.¹ This curve correlates closely with changes in business conditions, sagging at times of depression, rising gradually with increasing



prosperity, and then moving sharply upward during a crisis. It is one of our most useful indices.

(12) *Bank Loans.* Banking statistics in general have been so affected by the introduction of the new Federal Reserve system that few comparisons can safely be made with the past. Banking indices in the future can probably be worked out only after a new set of statistics has been accumulated. For purposes of illustration, however, the average loans of the New York Clearing

¹ Current figures for money rates are conveniently published in the Commercial and Financial Chronicle.

House banks may be taken. The course of these loans, as indicated by monthly averages of the weekly figures given in the *Commercial and Financial Chronicle*, is shown for the years 1903-08 on Chart III. It will be seen that the change from month to month is slight. In fact the relative stability of these figures during the period of rising money rates in 1906-07 gives them a peculiar significance, since it shows that the New York banks were regulating their loans with a view of just barely maintaining the required 25 per cent reserve against deposits.¹ When money rates were low, during depression, more funds were deposited in New York by the country banks and loans expanded. The banking system was exceedingly ill-adjusted for meeting an emergency.

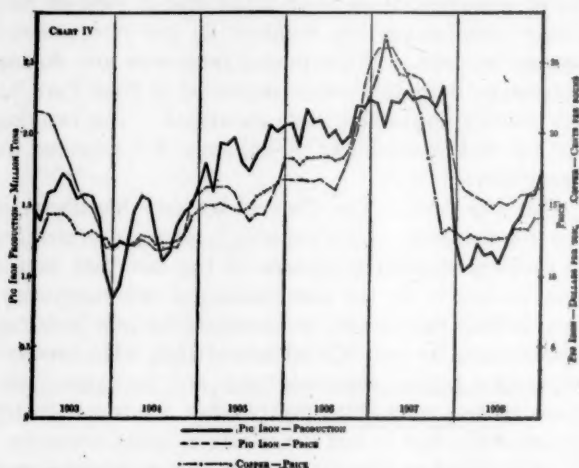
(13) *Pig Iron*. The classical business barometer is the iron industry. This industry is sensitive to changes in business conditions because of the fact that iron is used so largely for the construction of new machinery, new railway equipment, and recently for new building. The demand for iron falls off immediately when business depression begins, since additions and renewals cease. Construction work being postponable, the iron industry is one of the first to feel the effects of forced economy.

As is shown on Chart IV, the price and production of pig iron tend to move together. During periods of prosperity both production and price tend to rise, whereas after a crisis both fall. This same tendency is manifested by numerous other commodities. At times, however, price and production move in opposite directions, as, for example, when a considerable addition to the producing capacity has been made. For this reason it seems that both the price and production figures should be taken into account. So far as the years 1903-08 are

¹ O. M. W. Sprague, *History of Crises under the National Banking System*, p. 222.

concerned, attention is to be called to the rapid rise in price in the latter part of 1906 and to the decline which began in April, 1907. The price of pig iron broke in April, altho the panic did not occur until October. The production kept up until November. The statistics which were used were obtained from the *Iron Age*.¹

Another index to the conditions of the iron and steel industry is the unfilled orders of the United States



Steel Corporation, which were published quarterly till June, 1910, and since then monthly. The freedom with which cancellations are permitted in the steel trade lessens the value of these figures, but they may well be considered in connection with the prices of Bessemer billets or other steel products.

(14) *Copper*. This commodity is in the same class as iron and, since it is used for similar purposes, has become as sensitive a barometer. The greatest demand is,

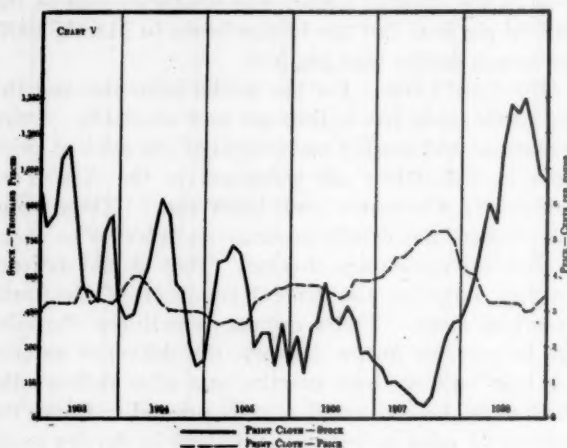
¹ The price quotations are for No. 2 Southern, Cincinnati.

of course, from the electrical industries. Statistics for the monthly production of copper in the United States were published by the Copper Producers' Association from January, 1909, to June, 1914. This period is too short to permit comprehensive comparisons to be made. The statistics for the average price of electrolytic copper, as given by the *Engineering and Mining Journal*, for 1903-08 are plotted on Chart IV. The general movement of the price of copper was similar to that of the price of pig iron, but the former broke in March, 1907, one month earlier than pig iron.

(15) *Print Cloth*. For the textile industries and the dry goods trade few indices are now available. Price quotations and weekly statements of the sales of print cloth in Fall River are published in the *New York Journal of Commerce* and elsewhere. These sales statistics are not strictly accurate and there is no check to show the percentage of error. They should indicate roughly, however, the general condition of the trade in cotton cloth. Under ordinary conditions the sales are in part for future delivery, the deliveries extending over two or three months, and after delivery the cloth must be converted, that is printed. Hence the volume of sales indicates the outlook in the dry goods market.

The price figures represented by the curve on Chart V are the averages of the Monday quotations for 28 inch, 64 x 64 print cloth. The activity of the mills and the strength of the market in 1906-07 are reflected in the rise in price, this rise holding until after the panic actually occurred. The sales had been heavy in 1906 and the first half of 1907, and fell off in July of the latter year only because the mills were getting so far behind on their deliveries. In fact premiums were being offered to the mills on orders for immediate delivery.

This demand for cotton cloth had nearly wiped out the stocks of cloth on hand in the leading primary markets,¹ as is indicated by the curve for stocks of print cloth given on Chart V. These statistics are perhaps not as accurate as those for sales, but undoubtedly show the general situation. The market decline to the low point in July, 1907, is especially significant when considered in connection with the price curve. The



accumulation of stock after the panic shows that it was then that over-production occurred, and has a strong bearing upon the general theory of crises.

Another index of the condition of the cotton manufacturing industry is the margin between the price of raw cotton and the price of cloth. This is found by deducting from the price of cloth the cost of the quantity of raw cotton required to manufacture that cloth.

¹ The primary markets are New York, Boston, Providence, and Fall River. These statistics were compiled from the tables in several editions of A. B. Shepperson's *Cotton Facts*.

This margin covers the manufacturing expense and the manufacturer's profits. In the months preceding the panics of 1893 and 1907, there was in each instance a sharp rise in this margin.¹ The margin reached its lowest point when the depression was most severe.

(16) *Silk.* The condition of the silk industry should be shown approximately by the imports and prices of raw silk. All of the raw material used in the industry in this country is imported, and the importations adjust themselves fairly closely to the demand from the manufacturers. In fact this is probably a better index to the industry than any figures for production would be, since the products are highly diversified. During the months preceding the panic of 1907 relatively large imports were received and there was a marked rise in price, the highest point being reached in May, 1907, after which a fall began.²

(17) *Tin.* As another illustration of the use of statistics of imports and prices for a raw material not produced in the United States, tin may be taken.³ The domestic production of this commodity is negligible. The imports of tin, like those of silk, fluctuate somewhat irregularly, owing probably to the irregularity in the arrival of the ships in which the material is carried. But they were heavy in 1906 and the first part of 1907. The price of tin also showed a striking rise during the boom period preceding the panic of 1907, with a slight break in June and the beginning of a sharp decline in August of that year.⁴

¹ A chart showing this margin for the years 1881-1910 is given in my book, *The Cotton Manufacturing Industry of the United States*, p. 174.

² The statistics for imports are published in the *Monthly Summary of Commerce and Finance*, and the price statistics in the *New York Journal of Commerce*.

³ Price statistics from *Engineering and Mining Journal*.

⁴ The statistics from which these conclusions for tin are drawn were collected by several students in my class in *Business Statistics* in the Harvard Graduate School of Business Administration. Other students have collected figures on cotton cloth prices and margins and on the prices of hides and leather, which have been of assistance.

(18) *Hides and Leather.* For the shoe manufacturing industry no statistics of production, sales, or prices are now to be had, and for hides and leather the only figures are for prices.¹ The most sensitive price statistics appear to be the quotations for Packers' No. 1 hides and Buenos Aires sole leather. Each of these fluctuates with the conditions in the industry, and in 1905 and 1906 both showed a general upward movement which culminated in January and February, 1907. The drop which occurred in the following months presaged still greater weakness in the future.

One complex phenomenon stands out clearly in a study of the price movements for these various commodities. The breaks in some instances preceded the panic by several months, whereas for other commodities the prices held up till the panic actually occurred. Through a more exhaustive study it may be possible to arrive at definite conclusions with reference to the laws of sequence. In other words, a correlation may be established which will serve as an accurate index to events likely to follow in the future. For this purpose an investigation of the changes in the prices of individual representative commodities will clearly yield better results than a study of a composite index number of prices.

(19) *Crops.* The prosperity of the country is dependent in no small degree upon the agricultural crops. Abundant crops mean better supplies of food for the population and more raw materials for the manufacturers of flour, cotton cloth, and other products. They also mean more purchases by the farmers of commodities of all sorts and more freight for the railroads. Unless the agricultural sections of the country are prosperous business is inevitably dull.

¹ Dun's Review; Shoe and Leather Reporter.

So far as my investigations have gone, it appears that the best index to the farmer's prosperity is the average yield per acre. True, the price which the farmer receives is an important factor, and is not to be neglected. But the higher prices in years of short crops are beneficial to only a portion of the farming community. If some farmers receive relatively large amounts for their crops while others have their incomes seriously curtailed, the gross amount of farmers' purchases is no greater and the distribution is not normal. An even distribution is most beneficial to business in general.

There is the additional difficulty, when attention is given chiefly to the prices for agricultural products, of ascertaining what proportion of the crop is sold at each price. Just how much the farmers receive is more or less in doubt. Further, production is to be watched with caution, because it does not adjust itself to price changes in the same way as the production of pig iron, for instance. The forces of nature influence the agricultural yield. Altho further investigation is needed to prove conclusively whether the yield per acre or the total yield and the price statistics are most significant, crop statistics of some kind clearly ought to be considered in any study of business indices.

(20) *Other Items.* In addition to the above indices there are several others for which statistics may be had after some delay or for which incomplete statistics are available. Unemployment statistics are a valuable index, as is proved by the report issued from month to month by the British Board of Trade. In this country, unfortunately, no unemployment statistics are currently available. The Massachusetts Bureau of Statistics has published quarterly statements on unemployment since March, 1908. The New York Bureau

of Labor keeps monthly records of unemployment, but up to the present time these have been published only after so long an interval as to give them little more than historical interest.

For lumber some scattered statistics of production and shipments are published and also some price statistics. Unfortunately the quotations for lumber prices in trade papers are not altogether reliable. Judging from the statistics given in Part IV of the Bureau of Corporations' *Report on Lumber*, accurate price statistics for certain grades of lumber, especially for the common grades of fir and pine, would be as valuable indices as are the price statistics of other commodities.

Newspaper and book-paper prices are regularly published, but they too seem to be unreliable. Furthermore, paper is sold largely upon contracts extending over a year or more, so that the prices are somewhat inflexible. The American Pulp and Paper Association has been collecting reports of production and these were for a time published.¹ From such material as is available, it appears that the paper trade is sensitive to fluctuations in general business conditions. The volume of advertising which the newspapers and magazines carry varies with business prospects and the size of the publications is thereby affected. When business is brisk there is also a greater demand for paper for posters, circulars, advertising booklets and for other purposes. For advertising itself some statistics are available,² but not enough to be of much service as yet.

The National Association of Wool Manufacturers began in December, 1913, to collect quarterly reports of the number of cards, combs, spindles, and looms in operation and idle in the woolen and worsted mills. If these reports are continued, they should prove

¹ In the *Paper Trade Journal*.

² *Printers' Ink* gives monthly tables.

valuable indices, even if they are not upon a monthly basis.

It is apparent, I think, from what has been stated in the foregoing paragraphs, that there is now abundant material for experimentation on this subject of business indices. In order to use these statistics properly some common basis of comparison is needed, which will not only provide a common denominator but which will also take into account the seasonal fluctuations. It is of vital importance to know whether an increase or a decrease represents a normal seasonal fluctuation or whether it represents a fundamental change in conditions. We now turn to a critical examination of the attempts which have been made to provide such a common denominator and to construct business barometers.

II. SOME METHODS OF BUSINESS FORECASTING

The systems of business forecasting which are now in use are open to criticism in two directions: (1) their selection of statistics and (2) their statistical methods. Such criticism does not imply a lack of appreciation of the useful service done by these "barometers." Their pioneer work has been especially valuable in creating amongst business men a more wide-spread interest, and a broader recognition of the fact that crises and depressions are not caused by politics or accidents.

(1) *Babson's Composite Plot*. One of the best known business barometers is that prepared by Mr. Roger W. Babson, who also publishes a very serviceable compilation of monthly statistics on his *Desk Sheet*. Statistics for twelve subjects are used in the preparation of this barometer, — (1) immigration, (2) new building, (3) liabilities of business failures, (4) bank clearings, exclu-

sive of New York City, (5) Bradstreet's index number for commodity prices, (6) surplus reserves of the New York Clearing House banks, (7) foreign money rates, (8) domestic money rates, (9) conditions of crops, (10) idle cars, (11) political factors, (12) stock market conditions. The first four are grouped together as representing mercantile conditions, the second four as representing monetary conditions, and the third four as representing investment conditions.

From what has been said in the preceding pages it is evident that these statistics vary greatly in significance. Immigration, for example, is a much less reliable index than bank clearings or domestic money rates, and idle car statistics are altogether unsatisfactory. Furthermore, the methods of obtaining statistics for three of the subjects are open to serious criticism. In order to get an index for foreign money rates the official rates of the Bank of England, Bank of France, and Reichsbank are averaged. Such an average does not seem to me statistically sound, since the policies of these banks are by no means the same. The Bank of France, for instance, sometimes puts a premium upon gold deliveries instead of changing the discount rate. For crops only corn and wheat statistics are used. The cotton crop, which provides about one-fourth of our exports and affects so large a section of the country, is not included. The estimated crops of corn and of wheat, in bushels, are added together, despite the fact that in this way corn is given a weight four times that of wheat, which sells at considerably higher prices per bushel and is more of a cash crop. Corn should be given a weight not over twice that of wheat. As previously stated, the figures for total production seem to me less satisfactory for this purpose than the average yield per acre. "Political factors," finally, cannot be measured statistically,

and to include such a subject indicates a startling disregard for scientific method. An index on such factors could, at best, be only guess work.

Both Babson's selection of subjects and his treatment of the figures are open to criticism. If only twelve subjects were to be used in preparing the business barometer, these twelve should have been the most sensitive and the most trustworthy. Babson's selection seems to me to fall far short of that requirement. It is especially notable that no strictly industrial statistics are used. The selection of subjects, however, is open to less criticism than the methods of manipulating the statistics.

In order to secure a common basis of comparison for these diverse denominations and to eliminate the effects of seasonal fluctuations, a set of intermediary "scale" figures was worked out.¹ Taking immigration for illustration, a table of scale figures was prepared for each month. For January the highest and lowest figures for the month of January during the years of 1898-1908 were found, — 18,300 in 1901 and 56,200 in 1905. The range between these two figures was taken as equal to 100 points. The difference between the two actual figures (37,900) was divided by 10. By adding this quotient, 3,790, to 18,300, the point ten "degrees" above the lowest was found, and by repeating the process the entire scale was built up in arithmetical progression until it reached the highest actual figure, 56,200. The same scheme was used in working out a scale for each month. For February the lowest and highest figures for immigration in the month of February, 1898-1908, were found and a 100 point scale similarly ascertained, and so on for the other months. Thus there is a separate scale for each subject for each month.

¹ "Preparing the Composite Plot," Babson's Reports, 1912.

To quote Mr. Babson's own explanation:¹ — "We then arrange the scale figures in column, placing zero over the column whose average approximates most closely to the average conditions of the years 1903 and 1904, — that is the depression following the 1903 panic. This date is taken arbitrarily as the starting point of the Barometer. We then place our index figures in series to the left and right of zero. If the volume of business increases so as to go beyond the scale, higher scale figures are added, using the same arithmetical progression as at first, so that the actual condition of the years 1898-1908 serves as a *constant* by which to compare succeeding years. Scales similar to this one on immigration have been prepared for all subjects."

As an example of the way in which the immigration scales for January, February, and March are worked out the following table is given.

| | Jan. | Feb. | Mar. |
|-----|--------|--------|---------|
| +60 | 56,200 | 68,700 | 139,100 |
| +50 | 52,410 | 64,170 | 128,440 |
| +40 | 48,620 | 59,640 | 117,780 |
| +30 | 44,830 | 55,110 | 107,120 |
| +20 | 41,040 | 50,580 | 96,460 |
| +10 | 37,250 | 46,050 | 85,800 |
| 0 | 33,460 | 41,520 | 75,140 |
| -10 | 29,670 | 36,990 | 64,480 |
| -20 | 25,880 | 32,460 | 53,820 |
| -30 | 22,090 | 27,930 | 43,160 |
| -40 | 18,300 | 23,400 | 32,500 |

On each scale the range would not necessarily be from - 40 to + 60, but in every case it would have a range of 100 points, with the lowest actual figure for that month, 1898-1908, at the bottom, the highest actual figure at the top, and "zero" fixed by the figures for 1903-04.

¹ "Preparing the Composite Plot," Babson's Reports, 1912.

This scale is then used for determining the index figure for the current month. For January, 1914, for example, the number of immigrants was 44,700. This evidently falls between + 20 and + 30 on the January scale for immigration. 41,040 corresponds to + 20 on that scale. Subtracting from 44,700, the difference is 3,660. The last figure is then divided by 379, which is the value of each degree on the scale. The quotient, 9.6, is added to + 20, giving an index of + 29.6 for immigration in January, 1914.

An index number is similarly worked out for each of the subjects, by finding the scale figure to which the actual figure for the month of January, 1914, corresponds. Each month in each year is handled in the same way.

For business failures, surplus reserves, and idle cars, inverted scales are used, since these subjects vary inversely with business conditions. But for surplus reserves, when the figures fall below a certain point, weakness rather than strength is indicated, hence, to quote Mr. Babson again, "below \$5,000,000 this subject is put upon what we call a *deficit* scale, declining quickly to zero as the reserves are wiped out and reading - 66 for a deficit of \$50,000,000, as in November, 1907." Similarly "when money rates for the best commercial paper reach about 5 per cent — an average occurring only in a period of excess loans — the scale figures begin to work downward again, for the 'lack of confidence' shown by the high rate overshadows the 'excess of business' feature shown by a majority of other subjects. On this panic scale the index moves to - 60 rapidly when rates advance from 5 per cent to 8 per cent or above." Both of these scales are purely arbitrary adjustments.

Having found the index for each of the subjects for a certain month these figures are averaged, giving double

weight to bank clearings, domestic money rates, and the stock market index. The final figure thus obtained is the index to business conditions. Before undertaking to examine the use which is made of this summary figure, let us make a critical examination of this method of securing index numbers.

In the first place, it is evident that the index numbers are in no sense percentages. Since the lowest point is not zero, they do not show even the percentage of the range above the lowest points. The index numbers depend upon this range and upon the location of the zero point. The question of whether or not 1903-04 can fairly be assumed to have been representative of normal conditions for all of these subjects is of minor importance. The heart of the problem is the method of determinating the range upon which the scale figures are based.

The use of the range between the highest and lowest figures for each month over a ten-year period as a base for the scale figures presupposes that there were no abnormally high and no abnormally low figures in any instance. If in any month one subject showed an exceptionally high figure because of extraordinary circumstances which did not affect the other subjects and which had no influence in other months, the range was thereby made abnormally wide. The scale figures and the index numbers determined from such a range are not properly comparable with those for other subjects and for other months. The range, in other words, may be said to have been placed at the mercy of the extraordinary events during this ten-year period. As a matter of fact, a little experimenting will show that the exclusion of a single high figure, using instead the one next in order, materially modifies the scale figures for any subject.

Take the liabilities of business failures, which showed as its high point \$100,045,440 in October, 1907. The greatest force of the panic was then felt by that subject. Altho in the following months failures were heavier than prior to the panic, they by no means exceeded the averages for the respective months to anything like the same degree as in October. Consequently the scale for liabilities of business failures for October is not fairly comparable with the failures scales for the other months. Again, as has already been shown, the approach and the effects of the crisis were not felt synchronously to the same degree by all the subjects. Domestic money rates, for example, reached their highest point in December, 1907,¹ and security prices their highest point in September, 1906. A brief examination of the statistics for the other subjects will show that there was no such correlation in their fluctuations as to warrant the use of this method of establishing a common basis of comparison or to justify the averaging of the index numbers.

The summary index figure which is obtained by averaging the index figures for the twelve subjects does not, therefore, indicate the percentage of anything, nor does it show the percentage change from month to month. It merely gives the average of the figures obtained by the use of this questionable range-scale method.

The summary figure is obtained solely for making the Composite Plot. The theory which underlies the Composite Plot is that in business, as in the physical sciences, "action and reaction" are equal and that the summary index figure for the twelve subjects measures business

¹ From the explanation which has been given of the "deficit scale" used for money rates when they rise above 5 per cent, the latter figure must have been taken as the maximum in fixing the scale. If this same plan were to be commonly followed, the scales would become entirely arbitrary, depending upon the judgment of the person who made them out.

action and reaction so accurately that we can foretell the amount of depression which will compensate for a preceding period of prosperity.

Tho the rhythmic movement in trade cycles is not to be disputed, it is more than doubtful whether there is a law applicable to our ultra-complex economic life which causes an exact balancing of action and reaction. Some forces may tend to counterbalance each other at one time, and yet not at another. Furthermore there may be long delays in the manifestations of the resultants of certain forces. And even granting that a definite law of this kind is at work, are the twelve subjects for which statistics are used by Mr. Babson so representative of all business conditions and forces that we can base hard and fast conclusions upon them? Are the statistics themselves so free from error that they can serve as exact measures? Is the method of reducing these statistics to a common basis so scientifically accurate that the final composite index number deserves confidence? It is obvious that each of these questions must be answered in the negative.

Finally, the Composite Plot itself is to be considered. To obtain this the summary index numbers are plotted as for an ordinary graph, with the additional provision of a line of "normal growth," — the X-Y line. This X-Y line is an essential part of the Composite Plot, since some of the subjects tend to show an increase from year to year in consequence of the growth of the country. If it were not for the growth of the country, the curve plotted from the index numbers would fluctuate above and below a straight line parallel to the base line. The line of "normal growth," however, must move upward in order to show a proper balance.¹

¹ It should be noted that for five of the twelve subjects there is no normal growth, but only fluctuations around the constant level. Money rates, for instance, do not necessarily increase with the growth of the country.

As the summary index numbers are plotted upon the chart, a part fall above the X-Y line and a part below. There develop, consequently, a series of areas bounded by this curve for summary index numbers and by the X-Y line. These areas alternate above and below that X-Y line. Those above are positive and represent action; those below are negative and represent reaction. Since action and reaction are to be equal, the positive and negative areas must be equal. They are not regular in depth or breadth but equal only in area. For a current month this Composite Plot is assumed to show the position in which the business world is with reference to the business cycle. From this Plot, it is assumed, one can judge how much positive or negative area can be expected to develop before a change sets in. The Plot does not indicate in any way whether this development is likely to be rapid or slow, whether the "reaction" will be sharp and quick or slow and long.

Obviously the relative size of the areas above and below the X-Y line depends upon where that line is placed. When this Plot was first published, the X-Y line was straight. Its direction had been determined by carrying the Plot back over several years and drawing the line of normal growth in such a way that equal positive and negative areas would be shown.

Until January, 1913, the line continued to be straight, running diagonally at an angle of about ten degrees from the horizontal. Events, however, were causing unequal areas to develop and a readjustment was necessary. Modifications in the direction of the X-Y line were introduced, causing long, irregular fluctuations. Had the direction of the line remained unaltered, the appearance of the plot at the present time would be quite different. Now the direction of the X-Y line is changed as occasion requires. To quote from an ex-

planation issued by the Babson Statistical Organization: "After considerable study of the different subjects, it seems clear that the subject most successful as an indicator . . . is the volume of bank clearings for the country, excluding New York. . . . But as it is always dangerous to use one subject alone and especially a subject reflecting surface movements, it is necessary to take bank clearings as an indicator only, and to check conclusions based upon it at the end of each year by all the important barometers of wealth which are reported annually, and again at the end of each cycle, as shown by the areas of the Composite Plot. *Therefore, on our Composite Plot, the line X-Y is now drawn so as to make the areas equal,*¹ with special attention to the cycles."²

In other words, without offering a detailed explanation, the X-Y line is now adjusted from time to time according to bank clearings, one of the twelve subjects used in obtaining the barometer figure, and, in the long run, the line is drawn so as to make the positive and negative areas equal. In last analysis therefore, the whole scheme turns upon the X-Y line, which is readjusted more or less in accordance with what the manipulator thinks that the chart ought to show.

(2) *Brookmire's system.* The other system of forecasting which I shall examine here is that of the Brookmire Economic Chart Co. In this system there are three composite indices and no single plot. No attempt is made to lay down rules that the indices must always react upon each other in the same way or that any hard and fast law is to be followed. It is recognized that many forces are at work which cannot be expressed statistically but which must be taken into consideration in judging the probable course of business conditions.

¹ The italics are mine.

² "How the Line of Normal Growth 'X-Y' of the Composite Plot is Located," Babson's Reports.

In obtaining the Business Index the following statistics are used: ¹ total bank clearings in the United States, bank clearings exclusive of New York City, commodity prices, railroad gross earnings, new building (70 cities), pig iron production, pig iron price, price of Bessemer billets, unfilled orders of United States Steel Corporation. For the Stock Market Index, the average price of twenty railroad stocks and twelve industrials is computed; and for the Banking Index, use is made of loans, deposits, reserves, ratio of reserves to loans, and rate on commercial paper.²

The method of reducing these statistics to a common basis has been explained by Mr. Brookmire as follows: "In combining these banking indices it was necessary to create a common scale on which to place each index before averaging them all together. I decided to take a period beginning with 1900 and find the average figure for each index taken. This 'normal' or 'zero' point is the place where the points of each index used fall half above and half below the normal line. For example, the 'normal' or 'zero' point of the loans to deposits graph is 98.5 per cent for the period 1900 to 1912. This 'normal' or 'zero' point is the starting point of the new combined index."³ That is, the median is apparently used as the standard in working out the scale.

In criticizing this system of forecasting, attention is first to be called to the limited number of subjects included and to the omission of all crop statistics. But, here again, the main criticism lies against the technical methods used in making adjustments for seasonal fluctuations and for normal growth. For those statis-

¹ J. H. Brookmire, "Financial Forecasting," *Moody's Magazine*, January, 1914, p. 8.

² *Ibid.*, June, 1913, p. 444.

³ *Ibid.*, June, 1913, p. 444.

tics which manifest a seasonal fluctuation, the seasonal variation is calculated and, before the index is prepared, the statistics are "compensated" in accordance with these calculations. Owing to the nature of the statistics a certain percentage of error must be involved in these calculations and compensations.

As regards "normal" growth, the rate of annual increase in those figures which are influenced directly by the progressive advance of the country is also calculated, and the figures are "stepped down" before using.¹ Since so many diverse forces affect these statistics, a rate of "normal" annual increase can, at best, be only an approximation; whereas the system presumes to make a nice adjustment. Obviously both the "compensation" and the "stepping down" are somewhat arbitrary, depending more or less upon the judgment of the person preparing the index. A system in which the personal element is dominant, as in this case, is always open to doubt. It does not tell its whole story upon its face.

III. SUGGESTED METHOD OF OBTAINING INDICES

It is apparent, from the criticisms which have been made in the preceding section, that one of the fundamental problems in preparing indices of business conditions is to secure a common denominator which will allow for normal growth and seasonal fluctuations without leaving any of the adjustments or compensations to personal judgment or manipulation. To achieve this end I suggest the following method.

For each subject let a monthly index number be obtained by dividing the actual figure for the month by the average for that month during the ten preceding

¹ J. H. Brookmire, "Financial Forecasting," *Moody's Magazine*, June, 1913, p. 444.

years. This is illustrated by the following table, which gives the ten-year monthly averages, the actual figures, and the index numbers, for one item, namely bank clearings, exclusive of New York City; the period covered being the years 1913 and 1914. The figures for clearings are from *Bradstreet's*.

BANK CLEARINGS

| Month | Base (Average for Month, 1903-12) ¹ | Actual Figures ¹ | Index Number |
|---------------------|--|--------------------------------|-----------------|
| 1913, January | 4,903 | 6,739 | 137 |
| February | 4,142 | 5,670 | 137 |
| March | 4,728 | 6,100 | 129 |
| April | 4,612 | 6,090 | 132 |
| May | 4,565 | 6,025 | 132 |
| June | 4,549 | 5,831 | 128 |
| July | 4,639 | 6,080 | 131 |
| August | 4,350 | 5,492 | 126 |
| September | 4,407 | 5,841 | 132 |
| October | 5,162 | 6,859 | 133 |
| November | 4,913 | 6,157 | 125 |
| December | 5,041 | 5,536 | 130 |
| | | | |
| Month | Base (Average for Month, 1904-13) ¹ | | |
| 1914, January | 5,193 | 6,687 | 129 |
| February | 4,392 | 5,500 | 125 |
| March | 4,985 | 6,263 | 126 |
| April | 4,794 | 6,218 | 130 |
| May | 4,732 | 5,797 | 122 |
| June | 4,767 | 5,968 | 125 |
| July | 4,872 | 6,180 | 127 |
| August | 4,577 | 5,233 | 114 |
| September | 4,657 | 5,269 | 113 |
| October | 5,460 | 5,981 | 110 |
| November | 5,180 | 5,551 | 106 |
| December | 5,321 | 5,979 | 112 |

The ten-year average for the month of January, 1903-12, was \$4,903,000,000; the actual amount for January, 1913, \$6,739,000,000. Dividing the latter by the former, an index number of 137 is obtained. This

¹ In millions.

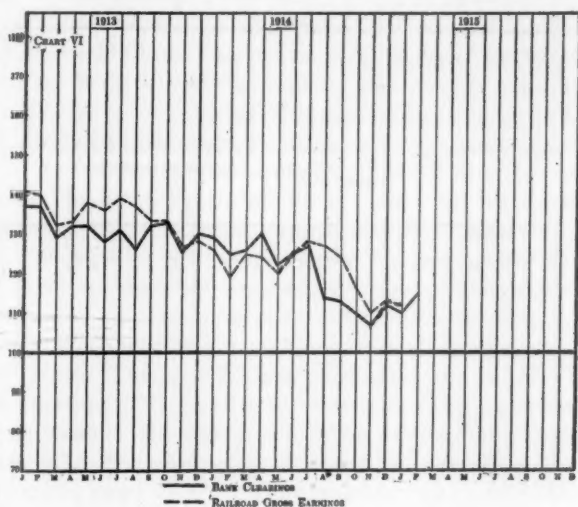
means that in January, 1913, bank clearings were 37 per cent above the ten-year average for that month. The ten-year average for February, 1903-12, was \$4,142,000,000 and the actual amount in February, 1913, \$5,670,000,000, which also gives an index number of 137. Similarly for each month in 1913 the actual number is divided by the average for that month during the years 1903-12. For January, 1914, the actual amount, \$6,687,000,000 is divided by \$5,193,000,000, the ten-year average for January, 1904-13; and a similar base is used for the other months in 1914.

By means of this moving base the comparability between the index number for December, 1913, and that for January, 1914, is maintained. The basic months used in obtaining the index for January, 1914, bear the same relation to the basic months used in obtaining the index number for December, 1913, that the latter bear to the basic months for November, 1913. By using the ten-year monthly averages, seasonal fluctuations are automatically allowed for, and by always taking the ten preceding years as the base, provision is made for normal growth.

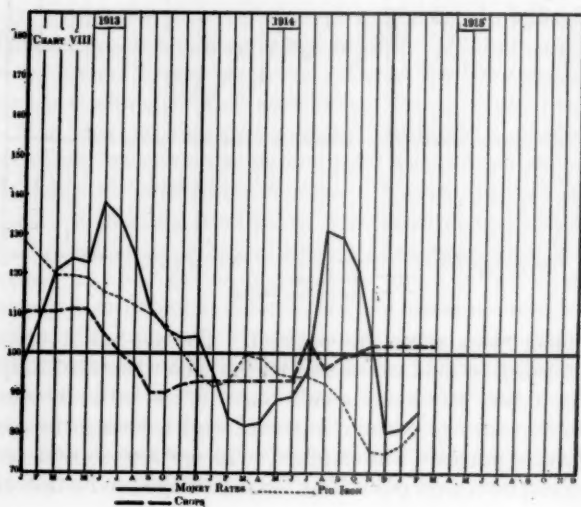
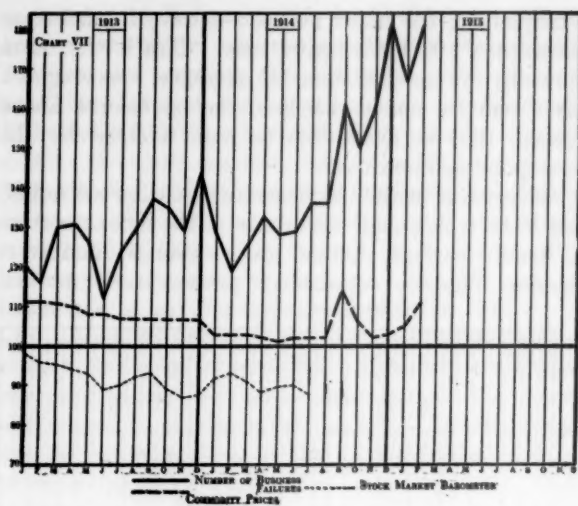
The ten-year monthly average represents a normal standard, whether the figures tend to increase or to fluctuate about a constant level. For the purpose in hand this moving base seems superior to a fixed base and certainly it is more reliable than any arbitrary scale. It may prove advisable to use a fifteen or a twenty-year period in determining the bases, in order to reduce the influence of exceptional years. The principle, however, will remain the same. The ten-year period facilitates the use of those statistics which have not been collected for a longer time and, from numerous experiments which I have made with a wide variety of statistics, the ten-year period appears to be satisfactory.

In plotting the index numbers I have in each case represented 100 by a heavy line. This is the norm shown by the ten-year monthly averages. As long as a curve remains above this line, the figures are above normal, that is, above the ten-year average for the corresponding months.

The general method is illustrated by Charts VI, VII, and VIII, which show the course of the index numbers for bank clearings, railroad gross earnings, number of business failures, commodity prices, stock market,



money rates, crops, and pig iron. The war has brought hardships untold to the statistician who wishes to study the indices of business conditions. It has led to the discontinuance of certain statistics, and a change in the form of others. The Copper Producers' Association, for example, ceased publishing figures for the production of



copper. The *Boston Transcript* reduced the number of stocks used in obtaining its barometer from twenty-five to twenty, and several other sets of statistics were upset. The charts here represented are only a part of those which have been worked out in my experiments, but they will suffice to explain this method of presentation.

The bank clearing statistics used are those published monthly by *Bradstreet's* for the United States exclusive of New York City. The statistics for the number of business failures and also the index number for commodity prices are from *Bradstreet's*. Railroad gross earnings are for ten roads as given on Babson's desk sheet. The stock market barometer is that of the *Boston Transcript*. Money rates are represented by the average monthly rate on 60-90 day commercial paper in New York. For each of these subjects the index numbers from which the curves were plotted were obtained by dividing the actual monthly figures by the averages for the corresponding months during the ten preceding years.

For pig iron an index number for production was worked out upon the same general plan. Then in the same way an index number for price. In order to get a single index number for pig iron which should show the net result of changes both in production and in price I have averaged the production index with the price index. For example, the production index for January, 1913, was 157.5, the price index 99.5, and the average index, therefore, was 128.5. It may prove better to use these two indices separately, but this combined index seems worth trying and watching.

For crops the index number has been prepared first for winter wheat, spring wheat, corn, and cotton. Other crops might be added, but these serve to represent the conditions in the great agricultural sections of the country. During the growing season the condition

reports of the United States Department of Agriculture are used. The index number for each of these crops for each month during this season is found by dividing the condition figure for the month by the ten-year average for the same month. When the final report of the Department of Agriculture is issued the yield per acre is taken as the best index and the index number for each crop is found by using as a base the average yield per acre for that crop during the preceding ten years. From December, when the final report of the Department of Agriculture is issued, till the new condition reports begin in the following spring, the index numbers for the crops remain constant. These constant index numbers during the winter and early spring give a proper representation of conditions, since the influence of the crops on the markets is practically without change during that time.

After the index for each of these crops was prepared, a weighted average was taken.¹ Winter wheat was given a weight of one, spring wheat one, cotton two, and corn four. This weighting corresponds roughly to the relative total value of each of these crops. The final weighted average was taken as the crop index, which was to represent trade conditions in the leading agricultural districts.

Looking at the charts here given, it is apparent, I think, that they fairly represent some of the conditions prevailing during this period. The indices for bank clearings and railroad gross earnings (Chart VI) correlate closely and show the general trend of events. The number of business failures (Chart VII) has been relatively high throughout, jumping sharply upward after the outbreak of the war. As regards the future, in

¹ Further experiments are being carried on to ascertain whether an average index or a separate index for each crop is more satisfactory.

view of the length of time during which failures have been relatively heavy, this is a favorable indication; there has been an unusually severe liquidation and the weak spots must have been pretty thoroly cleaned out. The price index tended to fall until the war came. The stock market showed continued depression.

Chart VIII is, perhaps, most helpful in interpreting the general course of business during these months. The rise in money rates in the early part of 1913, was due to the Balkan war. This was probably one of the primary causes of the business depression which began in the United States early in 1913. The decline later in the year was accompanied by a brightening of business prospects in the fall of 1913. Most industries showed an appreciable improvement about September of that year, but this improvement did not hold. The sharp decline in crop prospects which began in June, 1913, at just the time when the index for money rates was at its highest point accentuated the depression which was setting in and helped to cause the slight crisis of that month. The relatively poor crops, as indicated by this curve, show why there was not more recovery in the fall and winter of 1913 and why business was depressed during the entire spring of 1914. Since other factors were favorable and the crop outlook brighter in the summer of 1914 conditions appeared ripe for at least a moderate business recovery. The breaking out of the European war, however, suddenly tightened the money market and upset the whole business world.

The pig iron index is added to this chart, not as an index of all industry, but as an illustration of this method of comparison. One of the merits of this form of presentation is that the various factors can be studied separately and evaluated. A composite index figure for numerous diverse subjects may cover up significant

changes, which cannot properly be considered as counterbalancing each other.

At the present time satisfactory and reliable statistics are available for only a very few industries. We have no adequate record of the changes which are taking place from month to month in the symptomatic manufacturing industries and in the wholesale and retail trades. But before we can thoroly understand the complex causes of industrial crises, we must know vastly more of the actual conditions in various industries and trades. Possibly we shall no longer have serious panics, thanks to our new banking system; but we shall unquestionably be subject to fluctuations in industry, and probably crises will recur from time to time. Measures to prevent serious depression must reach much farther than to the banking system. Altho crises are manifested most strikingly in the financial field, which serves to bind together the whole business world, they have their roots and causes in industrial conditions. Hence the sooner the collection of more comprehensive statistical records for industry and trade is begun, the earlier can we acquire a thoro knowledge of the fundamental forces which affect business prosperity.

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WAGES BOARDS IN AUSTRALIA: IV. SOCIAL AND ECONOMIC RESULTS OF WAGES BOARDS

SUMMARY

Introduction, 563. — 1. The abolition of sweating, 564. — The elimination of home work, 569. — 2. Wages and working conditions, 572. — Are wages brought to a level by wages boards? 578. — 3. The displacement of labor, 583. — The old and slow workers, 584. — Displacement of men by women, 591. — Of women by men, 592. — Of Europeans by Chinese, 594. — 4. Effects on industry and industrial growth, 596. — Competition with other states, 600. — The limitation of apprentices, 602. — 5. The growth of trade unions, 606. — 6. Relations between employers and employees, 610. — The infrequency of strikes, 611. — 7. Enforcement of wages board legislation, 617. — 8. Public opinion and the wages boards, 621. — Wages boards *v.* Compulsory arbitration, 627.

IN attempting to evaluate the work of the wages boards or to describe the results which this mode of wage regulation has had on the prosperity and welfare of the people, we must guard against the assumption that we can speak with certainty as to the final consequences of this legislation. As Sir Henry Wrixon said¹ when the continuation bill was up for discussion in Parliament in 1900, the real operations of such laws are not revealed in a few years and may not surely be known in the course of one generation.

While fully admitting the tentative character of our conclusions, we may nevertheless say that the eighteen years of experience which the state of Victoria has had with wages boards offers the safest basis on which to form an opinion as to the results of this method of wage

¹ See this Journal for November, 1914, p. 40.

regulation. For not only has the Victorian experience been of longer duration than that of other states but it has been on a more extended scale and has persisted along the same lines from the beginning. South Australia and Queensland, after several futile efforts to inaugurate the wages boards system and after several years of more or less successful operation of their laws, have seriously modified if not transformed their plans by the introduction of compulsory arbitration. New South Wales added the special boards to her arbitration scheme but has never been free from the influence of the arbitration court. The experiences of Tasmania, Great Britain and some of our own states with wages boards have been entirely too brief to satisfy us as to the results. Whenever the experiences of other states and countries show the same results as appear in Victoria, we may say that they serve to strengthen our opinions of the success or failure of the Victorian legislation; but it is the Victorian experience which must afford the main reliance for such conclusions as we are now willing to formulate.

1. *The Abolition of Sweating*

The intention of the legislatures in all states and countries which have adopted the wages boards plan was to abolish sweating in certain trades and industries. It seems proper, therefore, that we should first inquire: how successful has the law been in accomplishing its main purpose?

Mr. Ernest Aves, who visited Australia in 1907, and made a careful investigation for the Home Department of Great Britain into the workings and results of wages boards and arbitration courts, was inclined to the opinion that the wages boards in Victoria had only

partially succeeded in overcoming the sweating evil.¹ Conditions, he said, had undoubtedly improved in the various branches of the clothing trade and also in bread-making, but Mr. Aves felt by no means certain that the improved conditions were due entirely or mainly to the Special Boards and he felt that should a prolonged trade depression occur, some reduction in the average wages paid might be expected to take place, especially among the home workers. On the other hand, he was willing to admit that the influence of the board rates like a long-established custom, would exercise a healthy restraint on the downward tendency should wage reductions become necessary.

Dr. Robert Schachner, a German economist who spent several years (1905 to 1907) in Australia and New Zealand, studying labor conditions and working part of the time as a laborer in various industries, was also of the opinion that the sweating evil had been only partially overcome. He mentions the women's clothing industries and book-binding as examples of trades in which sweating still continued.²

Much the same opinion seems to have been held by a careful American investigator, Dr. Victor S. Clark, who visited Australia in 1904 in order to conduct an investigation for the United States Bureau of Labor. He gives several instances to show that sweating was still in existence in Melbourne in the clothing trades at the time of his visit but he admits that "the general condition of operatives in these occupations has probably been considerably improved by the act."³ On the

¹ Aves, Report to the Secretary of State for the Home Department on the Wages Boards and Conciliation and Arbitration Acts of Australia and New Zealand (London, 1908), pp. 71-77.

² Schachner, *Die Soziale Frage in Australien und Neuseeland* (Jena, 1911), p. 244.

³ Clark, Labor Conditions in Australia, Bulletin of United States Bureau of Labor, no. 56 (January, 1905), pp. 71-72.

other hand, another American investigator, Mr. Harris Weinstock, who visited Victoria in 1909, in his report to the Governor of California says: "The consensus of opinion of all interested parties is that wages boards have so largely minimized sweating that it is no longer an evil in Victoria, where the 'sweater' has become a somewhat rare species."¹

The reports of the chief factory inspectors in the Australian states would certainly lead us to believe that sweating had been reduced to a minimum, if not entirely eliminated.

Mr. Harrison Ord, the Chief Inspector for Victoria, after reporting progress in this direction for several years, was able to make the following statement for the (men's) clothing trade as early as 1900:

I venture to affirm that there is now no sweating in the clothing trade in the State of Victoria. . . . In the short space of three years the whole circumstances of the trade have been changed. No complaints are now heard of gross sweating, or of clothes made in miserable homes for a more miserable wage. Many of the difficulties to which I referred in my report of 1898 have disappeared. The Department has little trouble in enforcing the Determination of the Board. The average wage paid will show that the majority of the men and women employed receive more than the minimum wage.²

In the following year (1901) Miss Mead, one of Mr. Ord's inspectors, had this to say concerning the under-clothing trade:

No change has been made in the Determination. Manufacturers continue to fix their own piece rates based on 4d. (8 cents) per hour for an average worker. I find that the work is most carefully timed and paid for accordingly. . . . Many of the notorious "sweaters" have settled down to fair prices, a few who at one time gave out work now make it up themselves instead of sub-letting it, while

¹ Weinstock, *Special Labor Report on Remedies for Strikes and Lockouts* (Sacramento, 1910), p. 72.

² Report of the Chief Inspector of Factories for 1900, p. 17.

others have disappeared entirely from the trade. Complaints *re* sweating are conspicuous by their absence.¹

This testimony of the inspectors in regard to the above branches of the clothing trades is fully confirmed by the reports of other investigators in regard to the same and other trades. Thus, the Report of the Royal Commission of 1902-03, an unusually sober document, by no means free from criticism of the wages boards, said with reference to the clothing trade:

To sum up the evidence in this trade, sweating in its worst form, which brought misery into so many homes, has almost disappeared, and if undercutting, and the payment of unduly low wages still exists, it is chiefly in the case of a few outworkers who act in collusion with their employers.²

The same report said of the underclothing trade:

Workers themselves admit that there is a great improvement in their earnings. Such of the old sweaters as still remain in business have settled down to the payment of fair wages while others have disappeared from the trade.³

Of the shirt-making trade it was said that, —

It will be admitted as a fact beyond dispute that in this trade the factory law has broken down a hideous form of sweating, and protected in no small degree an industrious and deserving class of women.⁴

Evidence furnished by later investigators offers no contradiction to these early optimistic reports as to the success of the boards in preventing sweating. When I was in Victoria in 1912, not only the factory inspectors but the men who had been most deeply concerned in the movement to prevent sweating, Mr. Samuel Mauger, Secretary of the Anti-Sweating League, Dr. Charles

¹ Report of Chief Inspector for 1901, p. 39.

² Report of the Royal Commission appointed to Investigate and Report on the Operation of the Factories and Shops Law of Victoria, p. xli.

³ *Ibid.*, p. xliii.

⁴ *Ibid.*, p. xlii.

Strong, one of its early presidents and promoters, Mr. Alfred Deakin, Rev. A. R. Edgar and Sir Alexander Peacock were unanimous in the opinion that sweating no longer existed in Melbourne and its suburbs, unless perhaps in isolated instances in industries not yet brought under the influence of a wages board's determination. The Anti-Sweating League still maintained an existence not only to exercise a watchful eye over the administration of the Factories Act but also to bring to the attention of Parliament the needs of new boards in industries where wages seemed to be unduly low. Trade-union secretaries when asked whether they considered that "sweating" had been eliminated by the wages boards usually replied that in the sense in which that term was popularly used it had been, but that in many industries wages were still below what trade unionists regarded as reasonable rates of pay.

In other wages boards states than Victoria, while there were no serious complaints in regard to sweating, the conditions in the trades in which sweating is most likely to occur did not appear on the whole to be as favorable for the workers as in that state. In South Australia the delay in securing boards or in securing a revision of the rates fixed by the first boards in such trades as dress-making, millinery, shirt-making and white goods, and ready-made clothing, kept the wages in these trades abnormally low. Especially in the millinery business was the situation bad. The board itself had fixed the minimum rates "for females of the age of 21 years for the first, second and third years respectively" at the ridiculously low rates of 5s. 6d. (\$1.33½) and 8s. (\$1.94) a week. The determination was referred by the Minister to the Court of Industrial Appeals which confirmed it as issued by the board. "Wages in this trade," said Mr. Bannigan, the Chief Inspector,

"are the poorest of all callings, the highest rate fixed being only 16s. 6d. (\$4) per week which is out of all proportion to the ruling rates in other classes of trade."¹

In New South Wales the wages in most trades, especially those in which the workers are well organized, are fully as high as in Victoria, but the trades in which women are largely employed do not appear to be as much under the influence of wages board determinations as they are in Victoria. I was surprised to find, in several instances when in company with the inspectors I visited factories in which many females were employed, that for these workers no wages boards had as yet been established.

Closely connected with the problem of sweating is that of home work. It was the workers in their own homes, it will be remembered, who were the chief victims of the sweaters prior to the passage of the wages board legislation. It was the hope of the reformers that legislation would force these workers into factories where the hours of work and sanitary conditions could be more easily regulated. That the number of home workers did as a result of the determinations rapidly decline for a time in most lines of industry in which they were employed seems indisputable. This in some instances seems to have been due to the fact that the piece-work rates (by which alone the home workers are paid) were fixed on a basis higher than the time rates in factories. This had the effect of causing the manufacturers to employ workers in factories by preference.² Perhaps fully as influential as the change in wages in bringing about this result was the change

¹ Report of Chief Inspector of Factories in South Australia for 1911, p. 7.

² Reports of Chief Inspector of Victoria, 1897, pp. 6-7; 1898, pp. 9, 20-21; 1899, pp. 15-16; 1903, p. 26.

in methods of production whereby the work of manufacture was subdivided and the principle of team work introduced. This necessitated conducting the work in factories where the workers carrying on the different processes of production could maintain an even pace. This same change from home work to factory work, as is well known, has taken place in countries like our own where no wages boards have been in existence.

Of late years the decline in the number of registered home workers in the clothing trades of Victoria has been checked and there has been even a considerable increase. Thus in 1907, the Chief Inspector of Factories reported 1,455 registered home workers, all but 24 of whom were employed in various branches of the clothing trades, and he declared this to be "a larger number than has been registered for some years."¹ The only explanation offered for the increase was that "more work is being given out owing to the difficulty of securing enough workers to work in the factories."² By 1911 the number of registered out-workers had increased to 1,929, but the growth in numbers was explained by the fact that an amendment to the Factories Act forbade "the giving out from any factory of any work on clothing except to a registered out-worker" and this increased the number of registrations and gave the inspectors a more complete oversight of the out-workers.³

The number of home workers regularly employed at their own homes in New South Wales was 730 in 1910, which represented an increase of 90 over the preceding year.⁴ They were nearly all found in Sydney, and were

¹ Report of the Chief Inspector for 1907, p. 62.

² *Ibid.*

³ Report of the Chief Inspector for 1911, p. 28.

⁴ New South Wales Statistical Register for 1910, Part vi, p. 603; 1909, p. 537.

principally females employed in the manufacture of clothing and textile fabrics.

In South Australia there was an apparently enormous decline in the number of home workers from 1,075 in 1907 to only 20 in 1908. But the explanation for this is found in the fact that after 1907 only those home workers were required to register who were "engaged in the manufacture of articles for factories or shops" and this, as Mr. Bannigan said, reduced the number to "almost the vanishing point."¹

In Queensland the reduction in the number of home workers as a result of the wages boards' determinations has been very great. The Director of Labour in his report for 1913 says that the number of home workers in the ready-made clothing trade had fallen from 140 in 1909, the year before the award was made by the board, to 20 in 1913. He explains the decline as follows:

I think the decrease may be attributed to the fact that the occupiers find it entails a very great amount of work keeping tally of the parts made by the workers, and also they consider the piece-work rate too high for the working of their indoor or outside workers. The award piece-work rates are not in force in a single factory in Brisbane; all are on weekly wages.²

But while, generally speaking, the determinations of the wages boards seem to have reduced, for a time at least, the number of home workers in the clothing trades, the determinations in certain other trades had the opposite effect. In the wicker trade of Victoria, for example, a wages board which had been formed in 1902 made a determination which increased the average weekly wage from £1, 2s. 11d. (\$5.57) to £1, 6s. 2d. (\$6.54). There was keen competition in this trade

¹ Report of the Chief Inspector of Factories in South Australia, 1907, p. 2.

² Report of the Director of Labour and Chief Inspector of Factories and Shops in Queensland for 1913, p. 24.

with Sydney manufacturers who at the time were independent of any board award. The result was that the Melbourne manufacturers reduced the number of hands in their factories to less than half the number formerly employed and according to one of the inspectors,

The result has been that all those who have been thrown out of the factories have started on their own, and work all hours with the result that they undersell those who have to pay wages and work limited hours.¹

2. *Wages and Working Conditions*

It is not possible in the compass of a single paper to show by means of statistics what effect the determinations of wages boards have had upon wages. Indeed, so numerous are the trades and the various branches thereof, so variable the number of workers, so diverse the modes of payment and so important the other elements entering into the situation, that it is doubtful whether even a complete tabulation of the changes made in the wages of the workers by the wages boards would throw any considerable light on the question as to what results have been achieved by this mode of wage regulation.

The Statistician for the Commonwealth of Australia, Mr. G. H. Knibbs, a careful and scholarly investigator, has prepared a table which shows the variations in wage index-numbers in the different Australian states from 1891 (before there was any wages board or arbitration court in existence) to 1912, when all the states as well as the Commonwealth had tribunals for the regulation of wages. The table was prepared on the basis of average wages in 1911, the number, 1,000 being taken as the index-number for that year in all the states.

¹ Report of the Chief Inspector of Factories in Victoria for 1902, p. 31.

VARIATIONS IN WAGE INDEX-NUMBERS IN DIFFERENT STATES,
1891 TO 1912¹

(Wages in 1911 = 1,000)

| Particulars | No. of Occupations included | 1891 | 1896 | 1901 | 1906 | 1907 | 1908 | 1909 | 1910 | 1911 | 1912 |
|----------------------|-----------------------------|------|------|------|------|------|------|------|------|-------|-------|
| New South Wales... | 158 | 858 | 819 | 855 | 883 | 907 | 910 | 939 | 965 | 1,000 | 1,055 |
| Victoria..... | 150 | 801 | 768 | 808 | 819 | 870 | 884 | 900 | 938 | 1,000 | 1,054 |
| Queensland..... | 87 | 910 | 874 | 903 | 911 | 916 | 927 | 948 | 962 | 1,000 | 1,013 |
| South Australia..... | 134 | 801 | 803 | 809 | 821 | 847 | 857 | 893 | 939 | 1,000 | 1,035 |
| Western Australia... | 69 | 887 | 908 | 913 | 914 | 914 | 921 | 927 | 969 | 1,000 | 1,034 |
| Tasmania..... | 54 | 939 | 854 | 899 | 937 | 906 | 906 | 915 | 966 | 1,000 | 1,168 |
| Commonwealth..... | 652 | 848 | 816 | 848 | 866 | 893 | 900 | 923 | 955 | 1,000 | 1,051 |

The table shows that the relative increase from 1891 to 1911 was greatest in Victoria and South Australia (the first states to establish wages boards) and least in Tasmania, where no tribunal for the regulation of wages existed during those years. But between 1911 and 1912 Tasmania showed the most remarkable increase of any of the states, an increase amounting to nearly 17 per cent. "This," says Mr. Knibbs, "is no doubt accounted for to a large extent by the fact that the wages board system was first adopted in Tasmania in that year."²

Without pretending to deny the accuracy of this conclusion as to the effect of the wages board system in Tasmania, it may be well to point out that this table gives evidence in itself as to how unsafe is the *propter hoc ad hoc* method of argument in such cases.

The lowest point reached in the wage scale in nearly all the states, as here shown, was in the year 1896. But the index numbers show that the increase of wages

¹ From Knibbs, Report no. 2, Labour and Industrial Branch of Commonwealth Bureau of Census and Statistics (April, 1913), p. 26.

² Trade Unionism, Unemployment, Wages, Prices and Cost of Living in Australia, 1891 to 1912, Report no. 2 of Labour and Industrial Branch of the Commonwealth Bureau of Census and Statistics, pp. 26-27 (Melbourne, April, 1915).

in Tasmania between 1896 and 1901 or between 1896 and 1906 was greater than in any other state, altho Tasmania was at the time without any method of legal regulation of wages; while it was during these years that the machinery for regulating wages was put in operation in all the other states, with the exception of Queensland.

In the review of the work of the various boards which for years has been carried in the annual reports of the Chief Inspector of Factories in Victoria, the attention of the reader is directed to the average weekly wages paid to employees in the trade the year before the determination came into force and then to the average weekly wage paid in the same trade the year in which the report was made.

The change is nearly always in the direction of an increase. Aside, however, from the fact that changes in the proportion of skilled and unskilled workers, or of men and women employees, or of adult and juvenile workers, will affect the average wage in the trade without necessarily affecting the wages of individual workers, it must be remembered that the period since 1896, when the Victorian wages board legislation was enacted, has been a period of rising wages and prices the world over. Therefore without any legislation the average wages in these Victorian trades might naturally be expected to have risen. Furthermore, the wage statistics for the trades for which no boards were provided almost universally show the same upward movement of wages. The question therefore becomes one of the relative rates of increase in the regulated and unregulated trades.

Mr. Aves in his report ¹ has made a study of the variation in wages in selected board trades both before and

¹ *Op. cit.*, pp. 28-31.

after the determinations came into force and has also shown the variations in selected non-board trades. He shows that for male employees in thirteen board trades the advances in wages previous to the determinations amounted in the aggregate to 7.6 per cent on the combined average rates of the trades, while in nineteen board trades after the determinations came into force the aggregate advance was 16.5 per cent on the combined average rates, and in twelve non-board trades the aggregate advance was 11.6 per cent on the combined average rates.

For female workers the advance of wages in the after-determination period in six trades was equal to 10 per cent on the combined averages and in twelve non-board trades the advance was equal to 8.8 per cent on the combined averages. Taken in connection with other wage statistics¹ these figures seem to show in a fairly conclusive manner that the determinations of the wages boards have been a contributing influence in the wage increases which have taken place.

The task of the wages board is of course not to establish a rate for all workers in a given trade or to concern itself with average rates in that trade, but to establish the minimum wage which may be paid to the workers generally in the trade for which the board is appointed, or various minima for the different branches of the trade or for different groups of workers classified according to sex, age and experience. It has seldom happened that a wages board has reduced wages either for the trade generally or for any particular branch of the trade, altho it has occasionally happened that the effect of a board's determination has been to reduce the average wages paid, since employers after the determinations were made replaced adult male workers by women workers or

¹ See especially the Aves Report, p. 43.

by apprentices or by so-called "improvers," that is employees who have not yet had the necessary experience to enable them to earn the wages of a fully experienced worker.

There is no guidance in the statutes as to the principle on which the minimum wage should be fixed. The only thing of this sort which has been attempted was the amendment to the Victorian law in 1902, which instructed the boards to ascertain the average rate or wage "paid by reputable employers to employees of average capacity" and to fix the minimum wage or rate no higher than such average rate. The same requirement was copied into the factories acts of the other states having the wages board plan. Inasmuch as the statutes did not attempt to define the word "reputable," it cannot be said that Parliament had done much in the way of furnishing a guiding principle to the boards. The clause, however, proved very embarrassing to the boards in their work. It meant in practice that a board could not raise the rates above the current rates in the trade without putting itself in the embarrassing position of claiming that most employers were not reputable. Accordingly in all states this provision of the law was repealed.

In the absence of any guiding principle the boards have been free to act according to whatever principle they saw fit to adopt. Generally speaking they have not consciously followed any principle, but wages have been established in accordance with the bargaining powers of the respective sides. The decisions of the arbitration courts, especially those of the Commonwealth Arbitration Court, in which Mr. Justice Higgins has set forth so clearly the principles which he has followed in establishing a minimum wage, have undoubtedly exercised considerable influence on wages

board determinations, but only by force of example and not because of any legal compulsion to follow these precedents. In turn it may be said that the judges in the arbitration courts have frequently been influenced and guided by the determinations of the wages boards.¹

Altho originally established to provide a minimum rate of wages in the trades in which wages were below the sum necessary to provide a decent subsistence for the worker, wages boards in Australia have long ceased to be guided by the notion of a subsistence wage. The workers in the strongly organized trades would not consider it worth their while to struggle to secure a minimum wage which was merely a subsistence wage. The wage for which they contend is the standard rate or wage, the one which will become the prevailing rate or wage in the trade in question. The result is that minimum rates of pay are established in the same way and on the same basis as they are established under voluntary collective bargaining where both employers and employees are well organized. Employers who at first strenuously objected to this have ceased to urge their objections and now recognize that so long as their competitors are obliged to pay the same wages there is little reason to fear the standard rates. At times when they have had reason to feel that the rates were fixed too high by the board, and that in consequence they would be unable to compete with outsiders, the employers have appealed to the Court of Industrial Appeals for a reduction of the rates fixed by the board. Reductions have been made by the Court in Victoria in the following trades or occupations: artificial manure, boiler-making, bread, builders' laborers, commercial clerks, fell-mongers, fuel and fodder, and ice. In one or two

¹ For a statement of the principles followed by the arbitration courts in fixing wages, see my article on "Judicial Determination of the Minimum Wage in Australia" in *American Economic Review*, June, 1913.

other trades, certain employees have secured from the Court an advance in wages over those allowed by the boards, but this advance has been due to a readjustment of the board rates in the various branches of the trade rather than to any intentional design on the part of the Court to raise wages above those established by the board.

Statements are frequently made that any system of wage regulation through wages boards or compulsory arbitration is bound to exercise a leveling effect upon wages. The original intent of the law, it is said, was to establish a minimum wage which should afford a decent subsistence to the worker but which should by no means represent the maximum wage in the trade or even the average wage. The board, however, under the strong pressure of the workers' representatives is led to fix the minimum so high that, it is claimed, employers can pay it only by bringing down the wages of the most competent workers to the rates established by the board for the less competent. In other words, the minimum wage becomes the maximum, and it is held that there is no incentive for the ambitious worker to put forth his best efforts. That this is one of the results of wages board determinations is an opinion which has been held by more than one investigator¹ and it is even now shared by many men in Victoria, not only by employers but by men prominent in public life like Messrs. Deakin, Peacock, and Watt, who have been and are still friendly to the wages board plan.

In spite of this strong support given to the theory, it appears to be one which is supported by *a priori* arguments rather than one based on the proof of actual experience. No doubt boards have at times made the

¹ Clark, *op. cit.*, pp. 65-66. Schachner, *op. cit.*, pp. 246-247. Report of the Royal Commission of 1902 in Victoria, pp. xxxviii, xlv, xlix.

mistake of setting the minimum rate too high, — a rate at which it was profitable to employ only the best employees. Perhaps at other times, altho the minimum fixed was low, some employers have taken advantage of it to reduce the wages of their workers. But in a country in which labor is as scarce as it is in most trades in Australia this has not been the usual result of a wages board determination. Several times in talking with employers who held such opinions as the above, I have asked them whether in their own factories the majority of the employees were working at the minimum rates. Invariably it has turned out to be the case that few if any of their own employees were working at rates as low as the minimum established by the boards. Of course in those trades where payment by the piece prevails, there is no danger of equality of earnings. But even where time wages are the rule, there is no good and sufficient reason why the regulation of wages by wages boards should cause wages to seek a level.

Employers are not obliged under minimum-wage laws to retain in their employ any one who is unable to earn the minimum fixed by the board, nor do they as a matter of fact do so. On the other hand, there is no reason why men whose superior ability has enabled them prior to a determination to earn a wage in excess of the minimum fixed by the board should allow their wages to be brought down to the legal minimum merely because their employers may have been compelled to raise the wages of those employees who had been paid less than the minimum established by the board. In the highly sweated trades, where advantage had been taken of the individual's poverty and weakness, the first effect of the determinations was undoubtedly to raise the wages of most of the employees. In this way the wages may be said to have been "leveled up," *i. e.*,

the gap between the poorest-paid and the best-paid workers was lessened.

This would account for such a condition as was described by the Royal Commission of 1902, which discovered that "there are clothing factories where no woman or girl receives more than 20s. a week" (the minimum wage fixed by the board).¹ Evidence furnished to the Commission showed that in this industry many if not most of the employees had been receiving less than 20s. a week prior to the determination. There was no evidence that the wages of the more competent workers had been reduced, but employers who were obliged to pay the legal minimum to all their hands introduced the task system, *i. e.*, they required a certain minimum output in return for the 20s. wage.²

The testimony of the factory inspectors and the wages statistics collected by them do not bear out the contention of those who claim that the wages boards' determinations tend to level wages. In Victoria the late Mr. Ord said in 1901: "The special board system has now been in force in a few trades since 1897 and I have no hesitation in saying that the minimum wage is never the maximum wage," and he quotes both the minimum and the average wages in several of the board trades to confirm his statements.³ Mr. Bannigan, the Chief Inspector in South Australia, said with reference to the first determination in the clothing trade:

So far I have not heard of any case of levelling down of the higher paid workers and the increased wage fixed for the lower-paid hands has merely resulted, so far as can be seen at present, in a demand for more experienced workers.⁴

¹ Report of Royal Commission of 1902, p. xxxviii.

² *Ibid.*, p. xi.

³ Report of the Chief Factory Inspector for 1901, pp. 11-12.

⁴ Report of the Chief Inspector of Factories in South Australia for 1905, p. 2.

The later wage statistics, so far as can be ascertained, tend to support this view of the inspectors that wages are not brought down to the level established by the board's determinations. Unfortunately, the method of presenting wage statistics in Victoria and other Australian states is not one which brings out the effect of a determination as it would be brought out if classified weekly wages or classified weekly earnings were given. The annual reports of the inspectors' office in Victoria show in one set of tables the minimum rates established by the boards in the various trades for which wages boards have been provided. In another table the average weekly wage for the trade as a whole is shown; the workers being classified only according to sex and age. In most of the trades, however, not one minimum wage is fixed for adults but several minima according to occupation or the nature of the work. Comparisons can only be made, therefore, between minimum wages and average wages and then only in those trades in which the adult workers are unclassified and one minimum wage has been fixed for all the adult males or all the adult females. In a few cases, however, comparisons may be made in this way for trades in which a considerable number of workers are employed. In the following table, unless otherwise stated, the figures refer to adult male workers.

Those who have been led to believe that the determinations of wages boards tend to establish one level wage for all workers irrespective of their abilities, have apparently been influenced by the fact that in nearly every industry where time wages prevail the great majority of the workers in any given occupation receive the same weekly wages, and since in the trades governed by the special boards this standard wage or rate of pay is generally the minimum wage fixed by the board, the

COMPARISON OF THE MINIMUM WAGES AND THE AVERAGE WAGES
IN CERTAIN TRADES IN VICTORIA

| Occupation | Date of Determination | Minimum Wage fixed by Special Board | Average Wage for 1913 | No. of Workers on which Average is based | Hours of Work |
|--|-----------------------|-------------------------------------|-----------------------|--|---------------|
| | d. m. yr. | s. d. | s. d. | | |
| Bill posters..... | 18 10 '13 | 51 0 \$12.39 | 52 9 \$12.82 | 41 | 48 |
| Boot makers..... | 1 1 '13 | 54 0 13.12 | 57 0 13.85 | 2,723 | 48 |
| Bread carters..... | 16 8 '12 | 48 0 11.66 | 49 2 11.95 | 540 | 60 |
| Commercial clerks..... | 31 3 '13 | 48 0 11.66 | 62 6 15.19 | 1,476 | 48 |
| Coopers..... | 5 4 '13 | 66 0 16.04 | 67 8 16.44 | 111 | 48 |
| Furniture makers (male)... | 1 11 '12 | 57 0 13.85 | 62 1 15.00 | 960 | 48 |
| (Female)..... | 1 11 '12 | 27 6 6.68 | 30 6 7.41 | 26 | 48 |
| Jam trade workers..... | 22 2 '13 | 48 0 11.66 | 50 9 12.33 | 196 | 48 |
| Livery stable employees... | 19 8 '12 | 42 0 10.21 | 45 10 11.14 | 137 | 65 |
| Milliners (female)..... | 3 11 '13 | 25 0 6.08 | 32 1 7.82 | 456 | 48 |
| Office cleaners (male)..... | 10 11 '13 | 42 0 10.21 | 48 5 11.77 | 5 | 50 |
| (Female)..... | 10 11 '13 | 22 6 5.47 | 24 5 5.93 | 25 | 30 |
| Painters..... | 1 11 '12 | 60 6 14.60 | 61 3 14.88 | 383 | 44 |
| Underclothing workers (female)..... | 1 12 '10 | 20 0 4.86 | 24 1 5.85 | 951 | 48 |

investigator concludes that the determination is responsible for the uniform rate of payment. What he fails to notice is that there is the same uniformity in trades in which there are no wages boards, provided the wages are paid on the time basis. Employers cannot measure individual variations in productivity unless they are very pronounced, or unless the piece-rate method of payment is employed. Accordingly they fix a certain wage which they offer to men whom they suppose to possess at least average ability and which, generally speaking, these men accept. This condition is not peculiar to Australia. It is fully as true of time wages in our own country, and the larger the establishment the more uniform are the wages paid to the workers in any given class or occupation.

3. *The Displacement of Labor*

The most serious charge brought against the method of regulating wages by wages boards is that it causes loss of employment to those who are unable to earn the minimum wage. It seems somewhat inconsistent for those who claim that wages board determinations result in a leveling of wages to claim also that they cause loss of employment, for if employers reduce the wages of the more competent workers in order to pay the minimum to those less competent, it is clear that there is no excuse for dismissals.

The friends of the wages board generally admit that one of the effects of the legislation has been a certain displacement of labor. In the case of piece-rate workers it is said that this need not be the result. Even tho the rate per piece be increased by the determination, the old, slow or physically unfit workers may continue at work, for the piece-work rates are fixed on the supposition that a worker of average ability working at these rates can earn the minimum wage which the board had agreed to. In the case of those whose pay is measured by the day or the week, however, there are bound to be some whose services are not worth to the employer even that wage which a special board might decide to be necessary to maintain a decent subsistence.

The point at which a man's inability to produce enough to make it worth while for his employer to continue him in his service is one which, of course, is reached sooner or later by nearly every worker who engages in manual labor, and the "dead line" in industry is one which is faced by wage-earners in every land. The most that can be said against a minimum-wage law in this respect is that it is likely to bring the old and naturally slow worker face to face with the situation

resulting from his loss of earning power sooner than might otherwise be the case. The character and position of such a man is well described by Mr. Bannigan, the Chief Factory Inspector of South Australia, in his annual report for 1908.¹

The first sign of decreasing usefulness in the male worker generally occurs at about the age of fifty, when the sight begins to get troublesome for indoor work, and thereafter he finds it difficult to keep pace with the bustle of factory life and gradually drifts out of it to give place to younger and more active men.

The Factories Act of 1896 in Victoria, which provided for the first wages board, made no provision for the workers who were unable to earn the minimum wages fixed by the several boards. Whether the framers of the act failed to see that a displacement of some of the workers would be one of the results of the establishment of the minimum wage, or whether they believed that the advantages of having the great mass of the workers paid living wages would outweigh the disadvantages of having a certain number of inefficient workers lose employment and be cared for by their friends or by the state, does not appear from the debates. It has been said that the friends of the wages boards thought that old age pensions would cure the evil, but it is more likely that this was an after-thought rather than a deliberate purpose. The Victorian old age pension law was not in operation until 1901, nor was there any old age pension law on the statute books of any Australian state at the time the Factories Act of 1896 was passed.

Whatever may have been the thought or intentions of those who framed the law, those who were called upon to administer it were confronted with the fact of displacement as soon as the determinations had been made and had gone into effect, and the question arose as to how

¹ P. 1.

the interests of the old, infirm and slow workers were to be protected.

The difficulties during the early years seem to have been largely in the clothing and the boot trades. In the latter trade the position of the slow workers was made more difficult by the fact that the introduction of machinery was itself tending to displace labor.¹ The Royal Commission of 1902-03 reported that

When the minimum wage was enforced in 1898, one of the largest employers, with a staff of 280, stated he had dispensed with 60 to 70 hands; another with a staff of 200 had dismissed 20, while a third who gave work to 160 persons expressed the opinion that one out of every eight adult males in the trade had lost their (*sic*) employment and had never regained it.²

Mr. Ord attributed the difficulties in both the boot and clothing trades to the fact that the piece-work rates were fixed too high and were not based strictly on the minimum wage. In the absence of any statutory authority he refrained from prosecutions when old and infirm workers were employed at lower wages than those fixed by the boards and he even granted permits to these old and infirm workers to continue at work at rates which were specified in the permits. He did not feel at liberty, however, to assume the responsibility of dealing in the same way with the workers who were naturally slow. In spite of the admitted defects of the law and the suffering caused, the Chief Inspector did not think that the interest of the old and slow workers should be allowed to break down the law. He said:

It has been my duty to listen during the past year to many of the histories of the old and slow workers. No duty I have ever had to perform has been so painful to me and no one feels more than I do that some provision should be made for such workers. At the

¹ Report of Inspector Hall in Report of Chief Factory Inspector of Victoria for 1897, p. 9.

² Report of the Royal Commission in Victoria, 1902-03, p. xxxvi.

same time, it is not desirable that they should be made use of for attacking the minimum wage if, as in the case of the Boot Board, the evidence is against their being employed whether there is a minimum wage or not, owing to there being a larger number of young men available than are required for the trade.¹

In neither the bread trade nor in the shirt trade, where the piece rates had been based on the minimum wage, were there any difficulties at this time with the old, slow or infirm workers,² but in the furniture trade there was the same difficulty as in the boot trade and for the same reasons.³

The Act of 1900 granting to the Chief Inspector the power to issue a license to aged or infirm persons to work at less than the minimum rate but at not less than the rate named in the license solved the problem for the old and infirm workers (but not for the slow ones) in a manner which to Mr. Ord seemed quite satisfactory. He issued sixty of these permits between May 1st and December 31st, 1900, and reported that the majority of the permit workers themselves received the licenses in the most friendly manner and apparently without any feeling of humiliation. Some employers sought to take advantage of the system by sending their employees to get permits at rates at which the employees themselves refused to work and which the Chief Inspector would not countenance. The men nevertheless were able to secure work at the rates named in the permits.⁴ This effort to take advantage of the permit system by employers appears in other trades⁵ and in the reports from other states.⁶

In 1901 Mr. Ord again referred to the permit workers in these terms:

¹ Report for 1898, pp. 12-13.

⁴ Report for 1900, p. 13.

² *Ibid.*, pp. 6, 15.

⁵ Report for 1904, pp. 20-23.

³ *Ibid.*, p. 17.

⁶ Report of Chief Inspector in South Australia for 1908, p. 4; Tasmania, for 1911-12, pp. 18, 24.

It is frequently still stated at public meetings that the board system prevents old and infirm men from obtaining work. I have never heard of such a case and probably I see more of such workers than any one in the state.¹

Again in his Report for 1902² he states that he had granted during the year 227 licenses in the 29 board trades in which there were about 30,000 workers whose minimum wages had been fixed by the determinations, and there was "not the slightest foundation" for the statement that the special board system was hard on the old and infirm workers. On the contrary, he said:

I have reason to believe that these workers obtain better wages than they would if the rates of pay were not fixed by Special Boards, and that they have less difficulty in obtaining employment than old and infirm workers in trades not under the board system.

Once more, in 1905, Mr. Ord referred to the "vague impression" among business men in Melbourne that the fixing of wages by special boards was injurious to the old, slow and infirm worker and he said:

I desire to again state that I do not believe there is a single case of such a kind, and if any one knows of any such worker being injured I will undertake to at once remove all cause of complaint if the name and address of the person is forwarded to this office.³

The officials now in charge of the factory inspectors' office in Melbourne express in more moderate language the same opinion held by Mr. Ord, namely, that the extent of the displacement of the old and slow workers by the minimum wage is not great. Mr. H. M. Murphy, Mr. Ord's successor as Chief Inspector, has recently written to the New York Factory Investigating Commission, in reply to a question asked, as follows:

Legislation which fixes a standard wage undoubtedly has the effect of displacing the unfit. Our experience, however, shows that this dislocation is not serious, and that as a rule things regulate

¹ Report for 1901, p. 12.

² P. 13.

³ Report for 1905, p. 8.

themselves fairly satisfactorily. It is true, however, that in Victoria for some years there has been a shortage of labor, and this fact probably has a good deal of bearing on this point. I do not think there is any evidence that philanthropic agencies have ever been called upon to increase their work through minimum wage legislation.¹

Mr. M. H. Stevens, the Assistant Factory Inspector, who had charge of the granting of licenses at the time I visited Melbourne, believed that the permit system was working satisfactorily, and he felt sure that if there were any considerable number of workers who were unwilling to apply for licenses and were, nevertheless, being forced to yield their places in industry to the younger and more active workers, it would have been brought forcibly to public attention.

There is no reason whatever to doubt the honesty of the opinions held by the factory inspectors and there is much to be said in favor of their views that if dismissals of employees because of age, infirmity or natural slowness were frequent, more attention would be focused on this part of the Factories Act. Yet the argument is one which is not entirely convincing. The reports made by all investigating commissions in Australia² and the opinions of nearly all impartial investigators from outside Australia are to the effect that the fixing of a legal minimum wage does result in an earlier displacement of the old, infirm and slow workers than would take place without the law. Thus, Mr. Harris Weinstock, who is unusually enthusiastic over the success of the wages board legislation admits that

The system is hardest upon the slow or inefficient worker who cannot make himself worth the minimum wage fixed by the wages

¹ Report of Irene Osgood Andrews to New York State Factory Investigating Commission (1914), p. 63.

² Report of Royal Commission (Judge Backhouse) of New South Wales in 1901, p. 29. Report of Royal Commission of 1902-03 in Victoria, Report of Select Committee of Legislative Council of South Australia, 1904.

board. . . . In good times the slow worker is the last to be put on, and in bad times he is the first to be sent off. This, as a rule, will be his experience in most every country and under most all industrial conditions, but since he cannot make his own bargains here, it works out still harder for him under a wages board law.¹

Moreover, nearly all the manufacturers interviewed (and they were by no means unfriendly to the law) expressed the opinion that old and slow workers found it difficult to obtain employment in ordinary times in a trade subject to a minimum wage law and that the permit system had by no means remedied the situation. Indeed, in some respects it was said the existence of the permit makes the situation more difficult since it is a direct proof of the holder's inefficiency. The most capable manufacturers, those who sought to attract to their shops the best workers, said that they did not want the permit workers at any rate of pay. While the majority of them held that for humanitarian reasons they would not dismiss men who had been in their employ for some time and whose efficiency had begun to decline, they admitted that they would not offer employment to a permit worker seeking work. It is also the feeling of many manufacturers that many workers who are unable longer to earn the minimum wage at their trade shrink from such an acknowledgment of this fact as the application for a permit to work at a lower rate carries with it, and they drift out of the trade altogether, to add to the number of unskilled workers or to endeavor to carry on work in their own homes.

Statistics in none of the Australian states show the number of licensed workers who are at work in the various trades in which wages boards are in force. "Slow" workers were added to the list for whom the Chief Factory Inspector might in his discretion issue a

¹ Weinstock, *op. cit.*, p. 66; see also Aves, *op. cit.*, pp. 62-66; Schachner, *op. cit.*, pp. 248-249, and Clark, *The Labour Movement in Australasia*, p. 231.

permit to work at a rate lower than the legally established minimum by the Victorian Parliament in 1903, and this is now the rule in all the states. According to a report made to Mr. Aves in 1907, the Chief Inspector in Victoria had issued 487 licenses which were then in force. This number was less than one per cent of the total number of employees in the 39 regulated trades.¹ In South Australia in 1912 there were only 95 licenses in the 57 trades under wages boards.² It is not claimed that these represent all persons in the regulated trades who are working at less than the minimum rates fixed by the determinations.

It must not be thought that the fact that the wages board determinations result in forcing out of employment a certain number of men and women who might otherwise continue for a time as wage-earners is to be viewed as a condemnation of the legal minimum wage. As already explained, the minimum wage merely hastens the operation of a force already in existence, which would sooner or later have compelled the same workers to yield their positions. The displacement of these workers means the employment of other and more active workers whose productive efficiency is greater. The displacement of the old and slow means that their necessities can no longer be taken advantage of to keep down the wages of the more efficient. Of course the responsibility of the community for these displaced workers is thereby increased, and this responsibility must be met by old age pensions, unemployment insurance and other means. But Mr. Mauger, the Secretary of the Anti-Sweating League, is doubtless right in his contention that there is a point beyond which the interests of the old and slow workers should

¹ Aves Report, pp. 62-63.

² Report of Chief Inspector for 1912.

not be considered by the boards when they come to fix the minimum wage.

From the standpoint of organized labor the use of the permit system is subject to a dangerous abuse. Trade-union secretaries seldom object to the granting of permits to those workers in the trade who are known to be old and infirm, but they look with suspicion on the claim of employers that a man because he is naturally slow cannot earn the minimum wage. It is pointed out that the slowness may be due to unusual care in production which improves the quality of the work. Besides the answer to the question as to whether or not a man is slow is largely a matter of individual judgment.¹ Generally speaking, however, there has been comparatively little criticism of the work of the inspectors in granting licenses.

The displacement of the old and slow workers is not the only displacement of labor which has been charged up to the wages boards. We have already seen that some of the early determinations caused a displacement of the home workers, but this was generally regarded as an advantage to the community, especially where those displaced had been working only for pocket money.

Of more significance is the displacement of men by women as shown by the condition in the clothing trade, where in 1896 in Victoria 33.7 per cent of the employees were women or girls, while in 1906 they made up 40 per cent and in 1913, 80.6 per cent of the total number in the industry. Probably other changes than the fixing of minimum wages were at work to bring about this result, but the Chief Inspector says that the great increase in juvenile female labor has tended to keep down the average wages,² and when one observes that

¹ Schachner, *op. cit.*, pp. 248-249.

² Report of Chief Inspector for 1908, p. 28.

in 1913 the average wage for all males in the trade was 47s. 1d. (\$11.44), while for all females it was 22s. 2d. (\$5.38), it is easy to see what the tendency in the trade would be.

The displacement of men by women is not, however, the usual thing. Displacement of women by men is more likely to be the result of determinations which aim at the establishment of standard rates and which under the pretense of equity fix the same rates for women as for men. One of the inspectors in Victoria in 1903 reported that the effect of the board's determination in the leather goods' trade, which established the same rate for hand sewing (45s. [\$10.93]) for women as for men, was likely to cause the women who for years had been doing a portion of this work to lose their employment.¹ Apparently in this case the board itself altered the rate for women, for the highest minimum rate for any class of female workers is now only 25s. (\$6.06), while for men it is more than double that amount, — 55s. (\$13.36).²

A notable example of a direct effort to exclude women from a given occupation is furnished in the boot trade. The work of skiving the leather uppers had been done by women on the Amazeen machine; that for soles on the Scott machine run by men. A machine called the Fortuna was introduced which could do the skiving for both uppers and soles. The work on this machine could be done by women and required very little muscular power. The representatives of the men on the Boot Board in Victoria argued that the rates should be fixed the same for women as for men but to this the chairman could not consent. However, some of the large employers came to the conclusion that it would be

¹ Report of Chief Inspector for 1903, p. 20.

² Report for 1913, pp. 95-96.

to their interest to have men do this work and they accordingly brought pressure on their own representatives, with the result that some of them went over to the side of the men and voted to establish equal rates for men and women for operating this machine. A New South Wales Board was asked by the workers to make the same award but refused to do so and when the case was appealed to the Arbitration Court, Mr. Justice Heydon held that this "was a claim by the men, for the men, that a wage should be imposed upon the women that would shut them out, and the women were not heard upon it." He would not agree to this.¹

A more recent attempt to exclude the women was shown in connection with the first determination made by the Commercial Clerks' Board. Equal wages (48s. [\$11.66] per week) were fixed for men and women by the board, but the women clerks, who had but one representative on the board, took an appeal to the Court of Industrial Appeals on the ground that equality of wages would drive them out of employment. The Court upheld their appeal and reduced the minimum wage for female cashiers in shops to 28s. (\$6.79) per week and for all others to 32s. (\$7.76), while the minimum wage for men was left at 48s.²

In some trades the effect of the establishment of a minimum wage for adults has been to increase the number of juvenile workers in the trade. This appears to have been the case in the underclothing trade in Victoria from the time of the first determination.³ The removal of the restriction on the number of apprentices in 1903 greatly increased the tendency to employ juvenile labor, and both the number and percentage of

¹ New South Wales Industrial Arbitration Reports, 1911, p. 589.

² Report of Chief Inspector for 1913, pp. 60-61. See also Piddington Report, p. xxxix.

³ Report of the Chief Inspector for 1899, pp. 12-13.

apprentices showed a great increase in several trades¹ during the years that this limitation on the power of the boards to fix the number and proportion of apprentices continued.

Still another and very troublesome form of displacement of labor for which the wages boards seem partially responsible is the substitution of Chinese workmen in the furniture trade for Europeans. The unpopularity of the Chinese and the fear that they would seek to control wages boards in their own interest led Parliament to provide for the appointment rather than the election of the wages board members in the furniture trade. This left the Chinese without representation on the board. The board declined to establish piece-work rates and fixed the minimum wage first at 7s. 6d. a day and subsequently raised it to 8s. a day. Many of the Chinese could not earn the minimum wage, and in fixing the minimum so high it had undoubtedly been the intention of the board to exclude Chinese competition. Directly the opposite result was accomplished. The Chinese workers who would have been driven out of the trade entered into collusion with their employers to evade the law and to furnish no evidence as to the real wages paid. Many new shops with from one to three workmen apiece began business, and when the inspectors questioned them in regard to the wages paid they either claimed that wages above the minimum were being paid and offered their books in evidence or they said "Alle same company," or "We alle same share um plofits" or gave some other evasive answer.²

The result was that while the number of European workers in the furniture trade declined from 1,103 in 1899 to 989 in 1907, the Chinese increased during the

¹ Report for 1904, pp. 18-19, 36-37; 1905, p. 17.

² Report of Chief Inspector for 1897, p. 11.

same years from 488 to 565.¹ Since then, however, the Europeans have shown some increase, while the Chinese have hardly held their own. The inspectors make no concealment of the fact, however, that they are unable to enforce the determination of the wages board upon the Chinese, and the whole affair affords, as Mr. Ord said "a clear instance of how powerless laws are for the imposition of a minimum wage so soon as such wage is opposed to the interest of the majority of the employers and employees."²

Our conclusion with reference to the whole matter of displacement of certain classes of workers must be that the minimum wage, like any other economic change, of necessity compels some readjustment of industrial conditions. To make the readjustment employers will be likely to seek to economize on that portion of the labor force which on the new wage scale would be likely to yield them the least profit. This may mean a displacement of men unable to earn the minimum by those able to earn much above the minimum, or it may mean a substitution of juvenile labor for adult labor or of women for men.

The displacement will be all the greater if machinery can be substituted for labor. The displacement will be much greater at the time when the determination is introduced. If changes in wages are not made too rapidly or violently the displacement may be hardly noticeable, especially if there is no keen outside competition.

¹ Reports of Royal Commission of 1902-03, p. 6, and of Chief Inspector for 1907, p. 77.

² Report of Chief Inspector for 1897, p. 10.

4. *Effects on Industry and Industrial Growth*

In industrial matters, as is well known, it is usually impossible to single out one from a number of causes, and, by pointing to certain results, declare with certainty that these have been due to the cause designated. The statement holds as true of wages boards in Australia as it does of any legislative experiment in any country. Undoubtedly a mode of wage regulation as radical as that of a legally established minimum wage would have important consequences in industrial development. It is equally true that in Victoria as in other wages board states important industrial changes have taken place in recent years. To say, however, that these changes have been due to wages boards and to wages boards alone requires a degree of confidence in one's own judgment which is fortunately lacking in most trained investigators.

One thing can be said with absolute assurance; the direful predictions made in the Victorian Parliament at the time the wages board legislation was up for consideration, as to the loss of trade, the increase of unemployment and the ruin of industries, which would follow, have not been fulfilled. How much greater (or less) would have been industrial development in this state without this legislation we have no means of knowing, but that there has been a rapid and almost steady increase in the number of factories and of employees is demonstrated by the statistics. In 1896, when the first wages boards were authorized, the number of factories registered in Victoria was 3,370 and there were employed therein 40,814 persons, which was a number but little in excess of the employees in factories ten years before. Every year since 1896 has seen an increase over the preceding year in the number of fac-

tories and every year but one an increase in the number of factory employees, until in 1911 the number of factories registered was 5,638 and the number of employees 88,694.¹

There have been, indeed, in Victoria since 1897, only a few unfavorable developments in the manufacturing industries which could in any way be held to have been the consequence of the labor legislation. Victoria, like other Australian states, has shared in the industrial prosperity which has so generally accompanied the upward movement in prices all over the world, and while it would be a mistake to hold the wages boards largely responsible for this prosperity, it is at least true that they have not caused depression.

The prediction that industries would be driven out of the state by the wages board determinations seems to have been fulfilled in only a few instances. I have already referred to the case of the brush factory which was closed and the business transferred to Tasmania, but this seems to have been due to the fears or stubbornness of the proprietor for he never gave the new system a trial in his establishment. The determination was welcomed by other employers in this industry.² Dr. Clark refers in his Report³ to a cigar manufacturer who moved to Adelaide to escape wage regulation. In the case of the fell-mongering industry, which employers declared had been well-nigh ruined by the first determination in 1900, the Royal Commission of 1902-03 was unable to find that it had been seriously affected except by the employers' action in closing their yards.⁴

¹ Report of Chief Inspector of Factories for 1913, p. 5. Figures could be given for later years showing a further increase, but they would not afford a fair comparison since in 1912 an Order in Council was passed, extending to the whole state the provisions of the Factories Act which brought under registration factories not hitherto included.

² Report of Chief Inspector for 1902, p. 17.

³ Labor Conditions in Australia, Bull. No. 56, U. S. Bureau of Labor, p. 77.

⁴ Report of Royal Commission, pp. liv-lvi.

At the time the Commission made its report it was able to state that,

One of these has resumed work with 50 hands, being about 30 less than before, and a second has started again with about 60 hands while the former manager of the last-mentioned firm has commenced business for himself with the same number. On the other hand, it is stated that one of the old firms has given up the business altogether.¹

Three coöperative societies of workmen had begun work after the closing down of the plants. They paid themselves the minimum wage fixed by the board and worked only 48 hours per week. They bought skins in the open market and made no reduction in the price of the finished article, and seemed to be doing a good business.² As both the number of establishments and the number of employees have continued to increase since 1901 in spite of a large increase of wages³ it is clear that the fears of the employers have not been realized.

The most notable example of the dislocation of industry following a wages board determination occurred in the boot trade, where the Royal Commission reported that after the first determination had been made,

The wage system combined with the use of labour-saving machinery and keener competition resulted in the closing of a number of small factories (47 in all, it is said). This cannot be regarded as wholly an evil, however, as many of them were started without sufficient capital, under the high protection given to boot factories by the State Tariff, and being provided with poor equipment, they were too often noted for producing inferior goods and paying low wages.⁴

Among the complaints made against the wages boards in Victoria during the early years of their exist-

¹ Report of Royal Commission, p. lvi.

² Ibid.

³ Report of Chief Inspector for 1913, p. 19.

⁴ Report of Royal Commission, p. xxxvi.

ence, one of the most frequent was that the export trade of the colony had decreased as a result of the increase in prices made necessary by the artificial rise in wages. It was this complaint which led to the reduction already mentioned in the minimum rates at first fixed by the boards in 1897. In spite of the reduction in rates there was a considerable falling off in the exports of both boots and clothing during 1898 and 1899, and Mr. Ord admitted that "after making every allowance it is probable that Victorian manufacturers would find it difficult to compete in other markets with other manufacturers that were not subject to any minimum wage."¹ In both industries, however, the decline in exports was short lived, and the Royal Commission of 1902-03 reported for the boot trade that "any ground lost by manufacturers in the export trade had been fully recovered"² and for the clothing trade that "the fears of manufacturers have not been realized but on the contrary the command of inter-state markets has resulted in a considerable expansion of exports of apparel from Melbourne."³

In the furniture trade there was also some falling off in exports following the first determination, but this was largely if not entirely due to the fact that nearly one-half the exports prior to the determination had been to West Australia, where the rapid increase in population caused by the development of the gold-fields led to an active but short-lived demand. Other countries shipping to the same market showed a similar decline.⁴

Not all the comments on the effects of the wages boards system on industry even during the early years are of an unfavorable sort. Mr. Aves refers to the

¹ Report of Chief Inspector for 1898, p. 9.

² Report of the Royal Commission, p. xxxvii.

³ *Ibid.*, p. xli.

⁴ *Ibid.*, p. liii, Report of Chief Inspector for 1898, p. 17.

opinion quite widely held that the determinations had tended to certainty and regularity of employment for at least all but the old and infirm workers, and he says that in the trades in which underpayment was most likely, especially women's trades, "the lesson appears to be being learned that low wages are not necessarily the cheapest."¹ In both the clothing and the wood-working some employers have admitted that they could produce at less cost with the higher paid than with the lower paid labor.²

One possible effect of the minimum wage which does not seem generally to have been noted was mentioned to me by Dr. Purdy, the Chief Inspector of Factories in Tasmania. He says that shortly after the first determinations had become effective in that state, the merchants of Hobart reported that their sales had increased as a result of the increased purchasing power of the laborers.

Where the wages board system has tended to weaken the employer's position, it is generally because an apparent burden has been imposed on his business which has not been imposed on his competitors. Probably the most noticeable example of this is where manufacturers under the wages board system are compelled to meet the competition of manufacturers outside the state not under such a regulation. Many examples of this competition might be cited, such as that in the plate glass industry, where manufacturers declared they could not meet the competition of English manufacturers and must close their factories.³ It seems likely that in this instance the imposition of a tariff on the raw material was as much responsible for their embarrass-

¹ Aves, Report, p. 47.

² Schachner, pp. 236-237.

³ Report of the Chief Inspector of Factories in Victoria for 1901, pp. 32-33; 1904, p. 30.

ment as was the increase in wages. In the wicker industry the unrestricted competition of Sydney firms which were not at the time under wages boards was in 1906 seriously crippling the Melbourne manufacturers, who were compelled to pay 4s. for work which their Sydney competitors secured for 1s. 6d.¹ In the clothing industry it was shown that manufacturers from Sydney and Melbourne were sending goods to Adelaide to be made up there and then returned to the owners, in the years before South Australia had adopted the wages board plan.² Generally speaking, however, such competition was not very serious for two reasons. In the first place, it was not long before the other Australian states had adopted legislation which placed the same restrictions on employers within their jurisdictions as had been placed on those in Victoria; and in the second place, the fact of outside competition is always brought to the attention of wages boards and is frequently responsible for the small increases allowed.

Another form of competition which the establishments subject to wages board determinations have at times had to meet is the competition of country districts to which the determinations did not extend. Thus the Victorian manufacturers in the saddlery trade in 1901 complained when the effect of the board's ruling was to raise the wages in the trade that the determination only extended to cities and towns and the shops in boroughs or shires were given an unfair advantage.³ The same complaint was made some years later by the furriers subject to a determination.⁴ This form of competition, in Victoria at least, need no longer exist

¹ Report of Chief Inspector for 1906, p. 43.

² Report of Chief Inspector in South Australia for 1899.

³ Report of Chief Inspector for 1901, p. 35.

⁴ *Ibid.*, 1907, p. 33.

for a determination may now be made applicable to all establishments in the state if an Order in Council is issued to this effect.

Another form of competition to which a regulated trade is liable is that of a trade not subject to a determination, but this is now not likely often to occur, since nearly all industries and occupations outside of agricultural callings and domestic service are provided with wages boards.¹

That part of the work of the various boards concerning which employers have made the most complaint has been the limitation of the number of apprentices. This complaint was made in the "slop" clothing trade in 1899² and in the wood-working trade and various other trades in 1901.³ The complaint became so loud that in 1902, Parliament took away from the boards the power to impose limitations on the number of apprentices. But the danger that apprentices would be used to displace adult labor and to defeat the purpose of the minimum rate led to the restoration of this right.

The same complaint in regard to the undue restriction of the number of apprentices and the counterclaim that apprentices were being used to keep down wages were made in Adelaide in the white work trade and in the bread trade.⁴ It is the employer doing business on a small scale who is most likely to be seriously affected by the limitation on apprentices, since a board usually provides that there may be one apprentice for a given number of adult workers and the small establishment not employing this number of men is thus at times denied the right to employ apprentices.⁵ As an offset

¹ Schachner, *op. cit.*, p. 239.

² Report of Chief Inspector for 1899, p. 7.

³ *Ibid.*, 1901, p. 39.

⁴ Report of Chief Inspector for South Australia, 1905, p. 2; 1908, p. 5.

⁵ *Ibid.*, 1908, p. 3; Schachner, *op. cit.*, p. 240.

to this evil of too few apprentices, Mr. Ord called attention to the fact that the practice of having the board fix the number and wages of apprentices made it incumbent on the employer to give them some real training, so as to make them worth the wages which he would be compelled to pay if they were employed by him. "The natural result will be," he said, "an improved class of workers who will be a credit to their employers, the trade and the state."¹

It is an opinion held by many in Australia that the wages board determinations benefit the large employer more than they do the small one. Because of his larger establishment the large employer can make a fuller utilization of the highly paid workmen. In the bakery trade, one Victorian inspector reported that the determination was weeding out the small baker, the man who employed only one hand. He would be unable to pay the minimum rate and would therefore himself enter industry as a wage worker.² A determination made by the Hairdressers' Board had the effect, so it was stated, of closing some of the smaller shops and throwing 70 men out of employment. In this case it was claimed by some that it was the intention of the board to bring about this result, and that the representatives of the employers on the board connived with the employees to fix the minimum wage so high that suburban shops in Melbourne could not operate. The Government for a time refused to gazette the determination but finally decided to do so.

Mention has already been made of the fact that the limitation on the number of apprentices or improvers is likely to bear harder on the small than on the larger establishment. The same thing is at times true of the

¹ Report of Chief Inspector for Victoria, 1900, pp. 11-12.

² Report of Chief Inspector, 1900, p. 14.

reduction in the length of the working day. Small shops located in the residence districts and receiving considerable patronage from people going to or returning from work are most likely to feel the effect of early closing laws and of the determinations which limit the working hours of their employees.¹

The small establishment, however, is not always the one to feel most the effects of a minimum wage. In quite a number of cases the increase of wages had the result of multiplying the number of establishments that undertook to employ no hired labor whatever. Such examples are frequent in the furniture, baking, butchering and wicker work industries. In general it may be said that like any new element in industry, the effect of a determination is likely to be felt most by the least resourceful in any trade. Some readjustment has to be made to meet the conditions growing out of the increase in wages and at times this is best made by the large employer, at other times by the small one.

Except in a few instances the wages boards do not seem to have greatly increased specialization or to have hastened much the introduction of machinery. In the clothing trades increased specialization did come at about the time of the early determinations and was doubtless assisted by them.² Attention has already been called to the increased use of machinery in the boot and shoe industry, which certainly was not primarily due to the determination of the wages board but was doubtless promoted by it. In this industry the reduction in the cost of production brought about by the use of machinery served fully to equalize the increase of wages by the determination. Mr. Ord felt that one of the most useful results obtained by the wages boards

¹ Schachner, *op. cit.*, p. 240.

² Aves Report, p. 53.

was to be found in this trade owing to this introduction of labor-saving machinery. He said:

If there had been no minimum [wage] the results would have been disastrous. With an over-stocked labor market, the inevitable results of individual competition would have been seen. The value of the labour would sooner or later (except in the better-class factories) have been the necessities of the workers. Each man out of work would have been willing to take a "little" less than the man in work and when such men had got as low as they would go, the old, slow, and infirm workers would come in and cut still lower. . . . It is improbable that a low minimum would result in one more man being employed, as the best man would always get the work in the end, and those at work might as well be paid good wages, since a lower wage would not benefit those out of employment.¹

No positive proof tending to show either increased efficiency or a decline in output on the part of the individual worker as a result of the determinations can be furnished. Too many and diverse causes enter into this matter, even if it could be shown that an increase or a decline in output had taken place. In the clothing trades the general opinion seems to have been that the early determinations had resulted in increased efficiency, but this may well have been because of the adoption of the task system. Employers whom I interviewed were almost unanimous in the feeling that the efficiency of the average worker had declined in recent years, and this same opinion was expressed by others than employers, men on the whole favorably inclined to the wages board system. The decline was generally attributed to the "go easy" or "make work" doctrines which they generally felt sure were being inculcated by trade-union leaders. The trade-union secretaries, on the other hand, indignantly repudiated this charge and most of them said that such a matter had never even been discussed in their meetings. They were also inclined to believe there had been no decline in output. When one

¹ Report of Chief Inspector, 1898, p. 12.

remembers that this same charge is made against trade unions in other countries, including our own, and is as vehemently denied by trade unionists themselves, he is prepared to conclude that, in the absence of any direct proof, whatever decline in efficiency, if any, has taken place is not to be charged up to the wages boards.

We may also say that there is very little evidence of "speeding up" by manufacturers as a result of the wages board system, tho the adoption of the task system in the clothing and boot trades¹ after the first determinations had been made furnishes examples. Generally speaking, however, the scarcity of labor in most lines of industry in Australia in recent years precludes any general adoption of such practice.

5. *Growth of Trade Unions*

To any one who is familiar with the strength of the trade-union movement in Australia and knows of the influence exercised in political as well as in economic affairs by the Trades' Hall in every capital city, it is hard to believe that the political system of wage regulation has not played an important part in this development of labor organizations. For the same reason it is hard to see why certain important officials of the American Federation of Labor are opposed to the regulation of wages in this country by wages boards or arbitration courts. One of the most important and influential of the Australian trade-union officials to whom I mentioned this attitude of our labor leaders shook his head and said: "I know it; out here we can't understand it."

According to a recent report of the Commonwealth Statistician, there were 433,224 members in 621 trade unions in Australia in 1912. There were 415,554 male

¹ Report of Chief Inspector of Factories in Victoria, 1898, pp. 13-14.

members, who constituted about 44 per cent of the (estimated) total number of male employees twenty years of age and over in all professions, trades and occupations; while the 17,670 females in unions made up 8.41 per cent of all employed females.¹ That the methods of wage regulation had apparently been one of the influences causing the growth of trade unions seems to be indicated by the fact that the membership in unions had remained almost stationary from 1891 to 1896, before wage regulation began, but had made rapid progress thereafter. The percentage of wage earners in unions is greatest in New South Wales, where the Arbitration Court frequently gives preference to unionists, but in Victoria, where the percentage is 43.98, the wages boards have undoubtedly exercised a strong influence.²

For many trades, especially those in which women or unskilled laborers are employed, the wages board is the beginning of organization. It brings the workers into coöperation for the first time and, for the time being at least, establishes representative government among them. If the determination raises the minimum wage rate, as it has done in nearly every case during the era of rising prices which has continued ever since the boards were established, there is a strong incentive for the workers to form themselves into a strong organization which shall see that they receive the wages prescribed. True, it is the business of the government factory inspectors to see that the determinations are complied with. But even a large force of inspectors could not learn of all the supposed violations if they were not brought to their attention by some responsible

¹ Report No. 2, Labour and Industrial Branch, Commonwealth Bureau of Census and Statistics (April, 1913), p. 12.

² *Ibid.*, p. 13.

agency or organization. This the trade union undertakes to do. The wage earner who believes his employer has violated the determination in his trade is most likely to inform his union secretary who is usually a paid official giving all his time to trade-union matters. If the complaint appears to the latter to be justified he reports it to the Chief Factory Inspector's office and an investigation is made.

The value of such an organization, especially to women, who in Australia as elsewhere find it difficult to organize to protect their own interests, is obvious. It is doubtful if a full compliance with a wages board determination is anywhere secured without an organization of the workers to see to its enforcement. A secretary of one of the most powerful trade unions in Australia told me in Sydney that he had assisted the women in several trades to form organizations and apply for wages boards. Important increases in wages besides improvements in working conditions, were obtained in this way, and so important did this gentleman believe the work to be that he said that if financially able to do so he would give all his time to such work of organization. A well organized union not only watches the enforcement of the determination, but usually takes the lead in asking for a wages board or in seeking a revision of the rates of pay; and it nominates the workers' representatives on the board. Frequently these are the only nominees, and 80 per cent of the employees' representatives on the boards are members of the unions.¹

Whether or not a well organized union having in its membership a good proportion of the employees in a trade is benefited by the wages boards system is a question which meets with different answers even

¹ *Aves Report*, p. 58.

among trade unionists themselves. The majority of the union secretaries whom I met were inclined to think that the wages boards were a benefit even to the strong unions, but there were others who thought that the unions could secure more through strikes than they could through wages boards.

There are other friends of labor outside the unions who doubt whether the wages boards are of any assistance to the unions. Even the author of the wages board law, Sir Alexander Peacock, doubts whether wages boards have been of much value to the well organized trades. There can be little doubt that their maximum benefits have been conferred upon those workers who without them as an incentive would have found it difficult to establish and maintain an organization.

As in the case of the workers, so too in the case of the employers, have the wages boards promoted organizations. Employers unite to nominate their representatives on the boards, to prepare their arguments presented to the boards, to appeal if need be to the Court of Industrial Appeals and to resist what they may consider to be an unfair administration of the law. There is less unity of interests, however, among employers than among employees. Not only is there the natural trade rivalry to keep them apart, but the large employers often find that a certain proposal affects them in quite a different way than it does their smaller competitors. While there are several strong associations of employers in Melbourne, such as the Chamber of Manufactures and the Victorian Employers' Association, which take an active interest in the work of the wages boards as well as in other matters of social legislation, it cannot be said that wages boards have fostered the spirit of unity among employers to the same extent that they have among the laboring classes.

6. *Relations between Employers and Employees*

The effect which wages boards legislation has had upon the relations between employers and employees must of necessity be a matter largely of opinion, and one's opinion is itself determined by the range of his experiences and by the views of those with whom he has come in contact. In Victoria, as in other industrial countries, these relations are frequently strained, and one finds the same mutual distrust and suspicion on the part of employers and employees which seems everywhere to accompany the wage system.

There can be no doubt, however, that employers and employees are on more friendly terms in the wages board states than in those states where labor disputes are settled by means of compulsory arbitration. It is almost self-evident that a better feeling is likely to prevail under conditions where employers and employees meet on equal terms in open conference to settle their differences, than where one side forces the other to appear in court to respond to certain claims advanced and the final adjustment must be made by a third party. One might well go further, and say that the conference plan itself must inevitably make for a better understanding and therefore give rise to a better feeling between the parties. Through such conferences employers learn to appreciate how difficult at times it is for their employees to make ends meet or to maintain a comfortable standard of living; employees on the other hand oftentimes learn to their surprise that the industry in which they are engaged is not a prosperous one and cannot continue its existence if the claims which the workers are making are to be allowed. Evidence that such good feeling has at times been engendered by the wages boards is found in the speech of a member of the

Legislative Council of Victoria in 1905, when the bill to make permanent the factories acts, including the wages board sections, was being debated. This member was engaged in the butchering trade. He said:

There had never been in the history of the trade as good a feeling existing as at present. At the annual picnic of the journeymen butchers the president and other leading members of the Master Butchers Association were present and testified to the good feeling existing between them and their employees. Others had told him that they would on no account revert to the old state of things that existed prior to the introduction of factory legislation.¹

A better test of the absence of any deep-seated ill-feeling engendered by the wages boards' system is seen in the relative infrequency of strikes and lockouts in those trades and occupations for which wages boards have been provided. In Victoria, in particular, a strike in any trade in which a wages board has reached a determination is now a thing of rare occurrence. Strikes of considerable duration and extent, which engendered much ill-feeling, have taken place on the government-owned railroads and in the state coal mine at Wonthaggi as well as in industries under private ownership and management, but with few exceptions these industrial disturbances have occurred in other than the wages board trades.

The annual report of the Chief Inspector of Factories in Victoria contains a brief history of the organization and work of each of the various boards. Only six industrial disturbances are there referred to as having occurred in the wages board trades. A lockout in the fell-mongering industry² in 1901 came as a result of the refusal of the Court of Industrial Appeals to change

¹ Hon. A. McLellan, *Parl. Debates*, vol. iii, p. 1808.

² Report of the Chief Inspector for 1901, pp. 23-24.

materially the wages board determination which reduced the working hours from 54 to 48 per week. A strike in the Chinese branch of the furniture industry¹ in 1897 occurred because the wages board on which the Chinese had no representation fixed the minimum wage so high that it caused wholesale dismissals of Chinese workmen. The Chinese workers had a strong union which required those at work to support those not employed. With the large number thrown out of work this burden on those who remained at work became too heavy, and the workers went on a strike, demanding the establishment of a system of piece-work rates. The result was that the Chinese employers connived with their employees to evade the law, and, as already remarked, they have continued to do this ever since in spite of determined efforts on the part of the inspectors to secure evidence to this effect. Another strike occurred in the Chinese furniture trade in 1903,² which involved 27 factories and lasted twelve weeks. It resulted in a 10 per cent increase in wages. The strike was of course in no way due to the work of the wages boards since the Chinese were not complying with its determination. In 1906 in the stone-cutting industry, the letter-cutters, about twenty in number, went on a strike because they were dissatisfied with the board's determination.³

In his report for 1907 Mr. Ord, in reviewing the work of the Bread Board, had this to say:

For the first time in over ten years a strike of some importance took place in a trade under a Special Board. It is a remarkable thing, however, that the strike was not against the determination of the Bread Board, but in consequence of the Court of Industrial Appeals altering a decision of the Board. . . . The Court after hearing evidence reduced the wages from £2, 14s. [per week] to £2, 10s., from the 15th of September, 1907. . . .

¹ Report of Chief Inspector, 1897, pp. 10, 11.

² *Ibid.*, 1903, p. 17.

³ *Ibid.*, 1906, p. 36.

From the 5th of August to the 14th of September the men had been receiving the increased wages allowed by the board. This fact no doubt had a good deal to do with the action of the union later on, as men do not willingly submit to a reduction of wages no matter how obtained, and in this case it had been granted by a tribunal appointed by Parliament for the purpose of fixing wages. . . . The strike commenced on the 29th of September. It was not of long duration. On the 2d of October the majority of the employers concerned granted the demands of the union, and the strike was over.¹

The last of the six strikes to which reference is made in the Chief Inspector's report was that of the timber stackers and sorters which occurred in March, 1910, as a result of a determination of the Wood Workers' Board which had fixed the wages of the stackers at 1s. less than the rates which had been paid. The stackers felt that they had not been satisfactorily represented on the board and engaged in a strike which lasted seven weeks. It was finally ended by the Minister, who called together a new board which adopted a new schedule of rates more satisfactory to the stackers and sorters.²

The above record of strikes and lockouts in the wages board trades, which has been gleaned from the reports of the Chief Factory Inspector's office in Victoria is possibly not complete; altho I have no reason to think that any industrial disturbance of any consequence has been omitted. Mr. Ord, in the various reports which he made up to the time of his death in 1910, always referred to the strike in the bakeries as the only one of any consequence which had taken place in an industry subject to a wages board determination. This is certainly a remarkable showing for the wages boards as a means of securing industrial peace. In the neighboring colony of New South Wales, with employers and employees subject to the severe penalties of the Industrial Arbitration Acts, there were between July 1, 1907,

¹ Report of Chief Inspector, 1907, pp. 18, 19.

² *Ibid.*, 1910, p. 71.

and March 31, 1913, no fewer than 447 "industrial dislocations."¹ Even in New Zealand, which has made a much better showing under its compulsory arbitration acts, there were between January 1, 1906, and March 31, 1912, thirty strikes coming within the scope of the arbitration act,² and some of them were affairs of considerable magnitude. In making this comparison between Victoria and other states it must of course be remembered that until very recently wages boards have not been found in industries (like coal mining and the transport industries) in which strikes are most frequent. Nevertheless, after making all due allowance for varying conditions, Victorian experience goes far towards justifying the assertion that it is the provision of means whereby the important differences between employers and employees may be adjusted in a friendly and equitable manner, rather than the element of compulsion, which leads to a diminution of strikes.

The Factories and Shops Act of Victoria contains no prohibition of strikes or lockouts nor are any penalties provided for those who take part in such industrial disturbances. Nevertheless, there is a very strong public sentiment in Victoria in opposition to strikes or lockouts in any trade or industry for which a wages board has made a determination. Mr. Ord undoubtedly reflected public feeling in regard to the matter when in his annual report for 1906³ he had this to say apropos the strike which had taken place in the stone-cutting trade:

It does not seem fair that men should obtain all the legal advantage of a minimum wage and then seek by a strike to secure an advance on the legal wage. If such a policy were adopted the em-

¹ New South Wales Industrial Gazette, April, 1913, pp. 18-36.

² Twenty-First Annual Report of the (New Zealand) Department of Labor, 1912, p. 11.

³ Pp. 39, 40.

players would be in the position of having to pay the rates fixed by boards plus such an amount as might be secured by a strike or the dread of a strike.

It is not that any one expects all employees to accept the lowest wage fixed by a board to which exception is taken; it is the united action of the trade seeking to secure for all employees a higher rate than that fixed by the board.

If the majority of the employees in a trade refuse to accept the wage fixed by a board and stop work till all are given the higher rate claimed, I think the determination of the board, so far as it relates to matters in dispute should be suspended so that both sides might be free to fight the case on its merits.

The strike in the bread-baking industry the following year led Parliament to follow the suggestion made by Mr. Ord and to incorporate in the Shops and Factories Act the following section:

Where the Minister is satisfied that an organized strike or industrial dispute is about to take place or has actually taken place in connexion with any process, trade, business or employment as to any matter which is the subject of a Determination of a Special Board or the Court of Industrial Appeals, the Governor in Council may by order published in the Government Gazette suspend for any period not exceeding twelve months the whole or any part or parts of such Determination so far as it relates to the matter in reference to which such organized strike or industrial dispute is about to take place or has taken place, and such suspension may at any time by an Order published in the Government Gazette be removed by the Governor in Council or altered or amended in such manner as he thinks fit.¹

Altho this power to suspend a determination has never been exercised in Victoria and, if the record of the Chief Inspector is complete, only one occasion² has arisen since 1907 where the power to suspend a determination because of a strike *could* have been exercised, there can be no doubt that this section is a valuable preventive against strikes in wages board trades. What the laboring classes have gained by most deter-

¹ Factories and Shops Act of Victoria, Sec. 173.

² The strike of the timber sorters and stackers in 1910.

minations is too important to be sacrificed by a strike which, without public opinion to support it, would have little chance of success. Of course when an era of falling wages and prices comes, strikes against determinations which call for a reduction of wages may become more frequent, but even then it is probable that labor leaders with good judgment will see that a strike under such circumstances has little chance of success.

In the other states which are or have been under the régime of wages boards without the adjunct of an arbitration court, the record concerning strikes appears to be lacking. In South Australia, only one strike is reported to have occurred in a trade governed by a wages board prior to the adoption of compulsory arbitration. This was called by the carters and drivers. Inasmuch as the South Australian Factories Act forbade strikes and lockouts "on account of any matter in respect of which a board has made a determination" and provided for heavy penalties for violation of this provision,¹ the Chief Factory Inspector, Mr. Bannigan, considered it his duty to collect evidence in regard to the strike, which might be used in case the Minister decided to prosecute the strikers. With this end in view, Mr. Bannigan went to the Trades Hall to seek information. For doing so he was called before the Ministry, the Labor party being then in power, and was severely reprimanded for having taken steps which might endanger a peaceable settlement of the dispute and he was furthermore suspended from office for several days. This seems to give partial confirmation to the view that the power to suspend a determination is fully as effective as the threat of fines to prevent strikes in wages board trades.

¹ South Australia Factories Act of 1907, Secs. 159, 160.

Neither the Queensland nor Tasmanian reports make any reference to a strike or a lockout having taken place in a wages board trade. Tasmania has the same penalties for strikes and lockouts¹ as were found in the South Australian Act of 1907.

7. *Enforcement of Wages Board Legislation*

The success of the wages board laws, like that of any other form of social legislation, is dependent on the support given to these laws by public opinion and the means provided for their execution. Such legislation is bound to have more success in a state like Victoria, with a relatively high degree of industrial development and where the indignation of the people had been aroused by the stories of sweating, than it will have in a state like Tasmania, where there are no large cities and where the only industries of importance are those connected with agriculture and the production of minerals and raw materials, and where if any sweating of the workers has taken place it has not been of sufficient extent to excite much public concern.

Assuming that there is a strong public sentiment back of such laws, their successful enforcement is largely a question of time and experience. In all the states where wages boards have been established, the first few years following the enactment of the laws and the adoption of the first determinations have witnessed more difficulties in connection with the enforcement than have later years. In part these difficulties are attributable to the rebellious attitude which certain employers always adopt towards new regulative legislation. In the main, however, the difficulties have been due to differences of opinion concerning the meaning

¹ The Wages Board Act (of Tasmania) for 1910, Secs. 54, 55.

and scope of application of the laws and the boards' determinations. Many of the determinations are very complex and detailed affairs and include a very comprehensive classification of employees and of the processes of manufacture. It is not surprising that many questions arise as to the place in this classification into which a given employee falls or as to what minimum rate of pay is to apply when an employee is shifted from one line of work to another. Faulty determinations of the boards or uncertainties as to their meaning have therefore been responsible for many of the administrative difficulties in connection with the laws.

Both in Victoria and in South Australia the chief difficulties in connection with the enforcement of the boards' determinations have had to do with the question of apprentices and improvers. The acts give to the boards power to fix the wages of apprentices and improvers and the number of each class which may be employed in proportion to the total number of employees, but the first acts did not define the words "apprentices" and "improvers." The legal authorities who construed the law decided that an apprentice was not necessarily a person legally bound by indenture. The result was that the two terms "apprentice" and "improver" were practically synonymous in the meaning which employers sought to give to them. When the Factory Inspector's office took action against an employer for paying less than the wages provided for apprentices he would claim that the employee in question was not an apprentice but an improver, and *vice versa*.¹ Later amendments to the act have sought to define the meaning of these terms, and some of these definitions go into great detail in their descriptions. Generally speaking, an *apprentice* is now defined as

¹ Report of Chief Inspector of Victoria for 1898, p. 19.

"any person under twenty-one years of age bound by indentures of apprenticeship;"¹ while an *improver* is any learner under twenty-one years of age who is not an apprentice, or any one who is over twenty-one and who holds a license from an inspector to be paid as an improver.

Next to the troublesome questions concerning apprentices and improvers, probably the chief difficulty which the inspectors have had to meet arises in cases where employees, fearing discharge if they assert their right to receive the minimum wage, have connived with their employers to evade the law. Such evasions were reported by Mr. Ord in the boot trade in 1898, when the introduction of machinery was causing a displacement of workers.² The most notable example of this sort, however, is the already mentioned evasion of the Chinese engaged in the furniture manufacture. All efforts to make the Chinese comply with the determinations of the boards in Victoria appear to have been abandoned by the inspectors.³

In spite of these many obstacles to the successful enforcement of the wages boards determinations, the later reports of the inspectors in all the states show that most of the difficulties have been overcome, and that employers and employees are year by year showing an increased willingness to observe the law. As has already been said, the influence of the trades unions in securing information concerning violations of the law and reporting these violations to the factory inspectors has been one of the most important aids in securing a stricter compliance with the law.

The successful enforcement of the wages board determinations demands an adequate force of inspectors

¹ Words of the Queensland Wages Boards Act of 1906, Sec. 2.

² Report of the Chief Inspector of Victoria for 1898, pp. 12, 13.

³ *Ibid.*, 1906, p. 28.

ready and willing to inquire into any reported violations of the law. In this respect most of the Australian states compare very advantageously with American states and with foreign countries. The conditions are favorable for enforcement because in nearly all the Australian states industry is highly concentrated and the number of establishments and employees is small in comparison with those in the great industrial nations. Victoria in 1910 reported 14 male and 4 female inspectors in addition to the Chief Inspector and his deputy. South Australia had in 1912, 5 male and 2 female inspectors in addition to the Chief Inspector, and Queensland, where industries are more scattered, had this same year 15 regular inspectors in addition to a few temporary ones. Of course these inspectors have the duties of ordinary factory inspection to perform in addition to seeing that the determinations are complied with, but this is an advantage rather than a disadvantage, for the duties are closely related. The willingness to provide so many inspectors shows that the Australians take their labor legislation seriously and are determined to enforce the laws and the determinations.

Prosecutions for breaches of the determinations show a tendency to increase, but this is to be expected as long as the number of boards and determinations continues to show rapid expansion. In Victoria in 1907, with 48 determinations in force, there were 59 cases of prosecutions for breaches of these determinations, convictions being secured in 43 cases.¹ In 1913, with 131 boards in existence, the number of prosecutions for breaches of determinations was 166, of which 129 were reported as having resulted in convictions.² Generally speaking, only very moderate fines, amounting on the average to

¹ Report of Chief Inspector of Victoria for 1907, p. 125.

² *Ibid.*, 1913, p. 157.

less than one pound (\$4.87) for each conviction, are imposed, but the costs generally amount to about as much as the fines. Queensland in 1912 reported 15 prosecutions for violations of determinations, with convictions secured in 11 cases.¹

8. *Public Opinion and the Wages Boards*

The final test of the success of any legislative experiment made by self-governing peoples is the degree of satisfaction which these laws afford to those who are responsible for their enactment and enforcement. It may well be that impartial students of the wages boards, after weighing all the advantages and disadvantages of this mode of wage regulation and after noting the changes in industrial and social organization which it has brought with it in Australia, and then considering the different historical tendencies of other peoples, will conclude that the system of wages boards ought not to be transplanted to other countries, to be nurtured in a different environment from that in which it first took root. Yet such a decision could not fairly be construed as a confession of the failure of the experiment in Australia. For if these boards have in the opinion of most Australians succeeded in solving the problems which they were intended to solve and have done so without perceptibly hindering industrial development or disturbing the social peace; if furthermore they have in large measure outgrown the early opposition which they encountered from employers, and have won the approval of the wage earners and the general public, — I think we must say that the Australian method of regulating wages by wages boards has proved successful, in spite of the fact that it has not

¹ Report of Director of Labour and Chief Inspector of Queensland for 1912, p. 22.

escaped criticism and that it has created new problems not foreseen at the time the laws were enacted.

No further proof of the public approval of the wages boards would seem to be required than the statement that in Victoria every session of Parliament since 1905 has seen an increase in the number of boards, until at the close of 1913 there were 134 boards in existence or in process of formation, representing practically all trades and occupations except agriculture and business of an inter-state character. There is the further fact that the wages board plan has been copied into the legislation of every Australian state except West Australia. As already mentioned, the wages boards are in some states coupled with the compulsory arbitration courts which destroys the original simplicity of the system. The retention of the boards, however, shows that the people have not lost confidence in them but that on the contrary they are considered to be a necessary part of the plan of wage regulation. Even in New Zealand the conciliation councils established in 1908 as a part of the compulsory arbitration plan are in reality wages boards under another name, and are undoubtedly the most important and successful feature of the New Zealand system. The wages board system was unquestionably adopted in the interest of wage earners, and since the establishment of additional boards comes, in the great majority of cases, as a result of the application of employees, it is clear that the wage earners are conscious of the advantages which the boards have brought to them.

The most remarkable feature in the development of the system, however, is the changed attitude of the employing classes towards the wages boards.

In the first of these papers ¹ reference was made to

¹ In this Journal, November, 1914, pp. 99-143.

the opposition which the wages board legislation met from Victorian employers in and out of Parliament during the years 1896-1903. The reports of outside investigators show that year by year this antagonism has grown less and that employers have become more and more reconciled to the wages board method of regulation.

Dr. Victor S. Clark, who visited Australia in 1904, just at the close of the long fight in Parliament to retain the wages boards, quotes favorable opinions of the boards from several employers in Melbourne operating under the system but says:

Notwithstanding these favorable opinions, however, employers, as a body are not sympathetically disposed toward the wage board system, and many are active opponents of the principle of state regulation which it implies. . . . In some trades every employer visited opposed the law, and in others there was a generally favorable attitude toward its provisions.¹

Ernest Aves, the English investigator sent to Australia in 1907 by the British government to investigate compulsory arbitration and the wages boards system, said:

Employers are, I think I may say, unanimous in one negative conclusion, namely, that Special Boards are preferable to Arbitration Courts, but on nothing else. There is also a very widely-spread belief that the boards have been instrumental, some say in abolishing, and others in modifying the evils of "sweating" and, from complex motives, there is in Victoria a great preponderance of opinion among all classes in favour of the retention of the Boards. But as to whether it is desirable to extend them, as to what their power should be, and as to their effects, there is the greatest possible diversity of opinion.²

Dr. Robert Schachner, a German economist whose investigations into labor conditions in Australia were

¹ Clark "Labour Conditions in Australia," Bulletin No. 56 of the (U. S.) Bureau of Labor (January, 1905), p. 74.

² Aves, Report to the Secretary of State for the Home Department on Wages Boards, etc., p. 46.

made a year or two later than those conducted by Mr. Aves, after citing the few instances in which the laborers had struck against the determinations of the boards, said:

In spite of these repudiations of the determinations, the employers themselves admit that they have become entirely reconciled to the law as it has brought them no disadvantages. Some boards in Victoria have even been established on the request of the employer in order that the dangerous competition of the sweaters might thereby be overcome.¹

Dr. Schachner also quotes a remark of the President of the Queensland Employers' Association made in 1908 to the effect that the Association was in entire sympathy with the principles of the wages board legislation, which it believed to be vastly superior to the system of compulsory arbitration.²

Mr. Harris Weinstock, himself an employer, visited Australia in 1909 to learn what success wages boards and arbitration courts had had in securing industrial peace. His enthusiasm for the work of the wages boards drew from him the following statements:

No impartial investigator who is seeking facts pure and simple can render any verdict other than that the Victorian wages boards have, to use a colloquialism, more than "made good." . . . Every Victorian manufacturer starts out on an even basis, so far as payment to labor is concerned. To secure the largest share of possible business he must exercise his managerial ability along other lines than that of "squeezing" labor. The legal minimum wage tends to drive the "sweater" out of the field. Where no legal minimum wage exists, the "sweater" tends to drive the fair manufacturer out of the field.

The wages boards have brought about another unexpected blessing to Victorian employers, wage-workers, and to the body-politic. They have for a period of over twelve years, aided in, if not maintained, an unprecedented era of industrial peace. The fact that the state had provided machinery where wage-earners, having wage grievances, could get a fair hearing and a fair deal at the hands of

¹ Schachner, *Die Soziale Frage in Australien und Neuseeland*, pp. 241-242.

² *Ibid.*, p. 242.

the trade experts representing both sides of the issue, and the fact that the determinations are enforceable against employers, left little occasion to resort to strikes in order to secure what they deemed equity.¹

This change in the attitude of the employing classes towards the wages boards system has continued. In 1912, among all the employers interviewed, I found none who wished to have the boards abolished. There was plenty of criticism of the work of the boards, and nearly every employer was careful to point out what he considered to be unfair in the determinations under which he happened to be working. But they were unanimous in saying that industry had adjusted itself to the system of wage regulation, and it would therefore be undesirable to attempt to restore the old system of unregulated competition in the hiring of laborers. That this more friendly feeling among Victorian employers towards the wages boards is due in part to the belief that if the boards were abolished a more drastic method of industrial regulations, viz., that by arbitration courts, would be adopted, there can be no doubt. In the states having compulsory arbitration employers were generally supporters of the system, altho their attitude was perhaps one of toleration rather than of genuine enthusiasm. In regard to the wages boards, however, most employers were willing to go farther than merely to express a tolerant attitude. They pointed to the gains which had accrued to industry from freedom from strikes and from having all employers placed on the same footing as regards wages. The officers of the Chamber of Manufacturers and of the Victorian Employers Associations — the organizations which had led the opposition to the establishment and extension of the wages boards — were willing to admit

¹ Weinstock, *Report of the Labor Laws and Labor Conditions of Foreign Countries in Relation to Strikes and Lockouts*, pp. 72-73.

that on the whole the wages board system was working well and that the organizations which they represented had ceased to oppose the further extension of the system.

Among trade unionists it is perhaps not surprising that as employers have grown more in favor of the wages boards their own enthusiasm for them has diminished. It is not that trade unionists are opposed to the wages boards. From only one or two of the trade-union secretaries did I get any expression of opinion hostile to the wages boards, and these men represented the extreme radicals, who were opposed to any system which implied friendly agreements with employers. Nearly all the secretaries were willing to admit that the wages boards had brought great benefits to wage earners, especially those who had been poorly organized and who were consequently weak in bargaining power. But they insisted that the time had now come for further advances in the way of industrial regulation. Wages boards had raised the wages of those on the lower levels, but had done comparatively little to advance the standard wage. They could not but contrast the results gained through wages boards with those which had been secured through arbitration courts, especially the Commonwealth Arbitration Court presided over by Mr. Justice Higgins. Furthermore, the wages board could deal only with the questions of wages and working hours, while the arbitration courts had jurisdiction over all industrial matters and could among other things give preference to unionists in the matter of securing employment. It is perhaps not surprising therefore to find that trade unionists in the states which were without state arbitration courts were inclined to compare the results to themselves of wages board regulation with those which had been secured elsewhere through arbitration courts, and to view with

favor the greater possibilities to labor offered by the arbitration courts.

Without having traced the development of compulsory arbitration in Australia and considered the methods and results of this system of industrial regulation, it would be unwise to attempt here any appraisal of the work of the arbitration courts or to make any lengthy comparison of the two systems of wage regulation. A brief statement of the main arguments made for and against the plan to substitute compulsory arbitration for wages boards may, however, not be out of place.

Compulsory arbitration was originally intended to put an end to strikes and lockouts, and judges of the arbitration courts still insist that the maintenance of industrial peace is the principal if not the sole end to be kept in view. Now, as has already been pointed out, the wages board states have shown an even better record in the way of freedom from strikes than have the states which have adopted compulsory arbitration. This is due, the friends of the wages boards claim, to the fact that the representatives of capital and labor have themselves settled by the conference method the important questions of wages and hours, the only matters in dispute which are of sufficient importance to precipitate a strike if not settled by peaceful means. If these and other matters are to be settled by a judge of an arbitration court, a man not directly engaged in industry, his judgment, it is urged, will be less willingly accepted than will the decision of those who are themselves participants in the dispute and consequently bound by their own decision. The opponents of the arbitration system say that a judge is not fitted by training and experience to deal with industrial matters and that he lacks the intimate knowledge of business matters which is possessed by members of a wages

board. Furthermore, the advocates of wages boards point to the greater simplicity and economy of the wages board method of regulation and above all else to the greater facility for transacting business possessed by the boards. A number of boards can be sitting at the same time, handling disputes in several trades. A single arbitration court in any one state would soon be congested with business, and to multiply the courts would only create confusion owing to overlapping of awards and contradictory decisions.

On the other hand, the friends of compulsory arbitration point to the danger, which they believe to be a real one, that employees sitting on a board of which their employers are also members will be afraid to take a decisive stand in favor of a considerable increase of wages or an important reduction in the hours of work for fear of dismissal, or at least for fear that their chances of advancement in the trade will be lessened. Employees who have the courage to take a strong stand for improvement of working conditions will be "marked men" among employers in that trade, it is claimed. A judge need not fear intimidation.

The supporters of compulsory arbitration claim in the second place that employers and employees on a wages board on which the public is practically without representation may easily connive to raise wages with the understanding that the increased cost of production is to be passed on to the public in the shape of higher prices for the articles or service furnished by the trade for which the board makes a determination. A judge of an arbitration court would be far more likely to consider the public welfare and the effect on prices of an increase of wages.

Finally the advocates of arbitration point to the fact that the sphere of influence of a state wages board

is limited to the boundaries of the particular state. It may be unable to raise the wages of even poorly paid labor if the industry is one in which there is keen competition with establishments located outside the state, while on the other hand a state wages board may neglect altogether the interests of people of other states and by its manipulation of the wage scale seek to attract trade to its own state. This claim is of course not advanced in favor of a state arbitration court; but it is a strong argument in favor of extending the powers and activities of the Commonwealth Arbitration Court, and is therefore strongly urged in Victoria. Indeed one may say that the most ominous influence now threatening the Victorian wages boards is the steadily growing power of the Commonwealth Arbitration Court. The political friends of the wages boards, men like Deakin, Mauger, Watt and Murray, see the shadow, but as yet have been unable to devise any satisfactory plan for averting this danger to the boards. When one considers the fact that as industries grow, their markets are not limited by state boundary lines and consequently they can be satisfactorily regulated only by a power which is interstate in character, he can easily see why the power of the Commonwealth Arbitration Court is likely to grow at the expense of the state wages boards and state arbitration courts. But the Commonwealth Arbitration Court is not limited to the regulation of industries which are interstate in character. It has jurisdiction over industrial disputes "extending beyond the limits of any one state."

To get a case heard by the Commonwealth Arbitration Court it is only necessary for employees in establishments situated in different states to make the same demand at approximately the same time upon their employers, which, when refused, constitutes a dispute

"extending beyond the limits of any one state." Laborers dissatisfied with what they have been able to secure through wages boards may easily foment a dispute which will bring their case before the Commonwealth Arbitration Court. The popularity with the laboring classes of Mr. Justice Higgins, who for several years has presided over the Commonwealth Arbitration Court, has increased the desire to get cases into court; and the rapid growth within the past two years of the number of cases presented to the Court for hearing has necessitated the appointment of two additional judges; a development which clearly shows that there is a disposition to make full use of the Court.

Nevertheless, it is not probable that the wages boards will soon, if ever, disappear. Their success and popularity in Australia has been too great to warrant such an assumption. The fact that even the arbitration states have adopted or retained the wages boards and incorporated them into their arbitration systems shows that there is a real need for these preliminary conferences between employers and employees to endeavor to reach an agreement in matters in controversy before the dispute goes — if it does go — to the arbitration court. The fact that in the great majority of cases an agreement is reached in these conferences augurs well for the continuation of the conciliation plan.

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REVIEWS

MOORE'S ECONOMIC CYCLES

IN this volume¹ Professor Moore again makes use of his characteristic method, developed in his earlier volume on *Laws of Wages*. The method, in brief, is to derive economic laws inductively from statistics by means of the modern refined methods of the calculus of probabilities. The specific problem in the present instance is to derive the law of business cycles of expansion and depression from data as to rainfall, crops, and prices.

First, by an application of Fourier's formula to data as to rainfall in the Ohio valley and in Illinois, he finds that the annual rainfall obeys a compound cyclical law based on cycles of eight and thirty-three years. He then correlates the rainfall at the critical period of growth for each crop with the total yield and with the yield per acre of the principal staple crops. These in turn are correlated with prices of pig iron and with general prices. The laws which he derives from this analysis may be briefly stated as follows. The annual rainfall, as just stated, obeys a law of compound cycles of eight and thirty-three years' duration. The yield of the great staple crops, both the gross yield and the yield per acre, obeys a similar law, presumably in the relation of cause and effect. The upward phase of a period of agricultural productivity brings with it, allowing a lag of a few years, a period of general business expansion, characterized by an increased demand for producers' goods (of which pig iron may be taken

¹ *Economic Cycles: their Law and Cause*. By Henry Ludwell Moore. New York, The Macmillan Company.

The reviewer wishes to acknowledge his indebtedness to Sewall G. Wright for valuable suggestions, and assistance in making the computations involved in preparing this review.

as typical), increased employment of labor, an increased demand for all kinds of goods, and a consequent rise in general prices. This process is arrested when the cycle of agricultural productivity begins its downward phase; and a reverse series of phenomena then appears. In the author's words: "These cycles of crops constitute the natural, material current which drags upon its surface the lagging, rhythmically changing value and prices with which the economist is more immediately concerned."¹

As a necessary step in the logical course of his argument, Professor Moore also makes some interesting studies in demand curves. From tables of the output and prices of certain staple goods he constructs a percentage demand curve by making the abscissas proportional to the percentage change in output for each year above or below the output for the preceding year (each preceding year being successively used as a base), while the ordinates are made proportional to the corresponding changes in prices, similarly computed. From this exploration he emerges with what he appears to regard as a surprising discovery, namely, the discovery of a new type of demand curve. "Our representative crops and representative producers' good exemplify types of demand curves of contrary character. In one case, as the product increases or decreases the price falls or rises, while, in the other case, the price rises with an increase of the product and falls with its decrease."² In connection with this discovery he treats somewhat patronizingly the whole *ceteris paribus* type of reasoning of his predecessors. The universal, negatively inclined demand curve of Professor Marshall is characterized as "an idol of the static state." The fruitfulness of the statistical method is contrasted with the "vast barrenness" of the conventional method.

Take, for example, the question of the effect of the weather upon crops. What a useless bit of speculation it would be to try to solve, in a hypothetical way, the question as to the effect of rainfall upon the crops, other unenumerated elements of the weather remaining constant! The question of the effect of temperature, *ceteris paribus*! How, finally,

¹ Page 149.

² Page 114.

would a synthesis be made of the several individual effects? The statistical method of multiple correlation formulates no such vain questions. It inquires, directly, what is the relation between crop and rainfall, not *ceteris paribus*, but other things changing according to their natural order; what is the relation between crop and temperature, other things conforming to the observed changes in temperature; and, finally, what is the relation between crop and rainfall for constant values of temperature?¹ The problem of the effects of the constituent factors is solved only after the more general problem has received its solution. This method offers promise of an answer to the question as to the relation between the effective demand price and the supply of the commodity.²

A valuable feature of Professor Moore's work is the insertion of the tables of statistics upon which his argument is based. This enables the reader, if so inclined, to check or supplement the reasoning. Numerous periodograms and examples of demand curves also illustrate the subject matter.

There can be no difference of opinion as to the great value of Professor Moore's method. He is doing pioneer work and is doing it with painstaking detail and thoroughness. The more economic theory can be reduced to the status of an exact science, the more serviceable will it become in bringing to finer order and adjustment our intricate and highly organized modern life. It is, therefore, with diffidence that I approach the task of criticizing a book involving at once such keen mathematical insight and such immense industry in laborious detail. Yet, to me, it falls short of conclusiveness. Several links in the logical chain seem to need closer scrutiny.

In the first place, the alleged discovery of an eight-year cycle is suspicious. It certainly does not harmonize with data relating to industrial crises. These are known to follow more nearly a ten-year cycle. Now an eight-year cycle, however adjusted to the dates usually given for crises, would bring some at a period of high prices, some at a period of low prices, and some at intermediate points. It is clear, then, that if Professor Moore's economic cycles are real, they

¹ The full multiple correlation here suggested is not, however, carried out in the text.

² Pp. 67, 68.

represent a phenomenon disconnected with the well known phenomenon of industrial revulsions. This discrepancy led me to undertake an independent study of the data.

It was first observed that the eight and thirty-three year cycles were derived from data as to *annual* rainfall, while the whole argument rests upon the *effective* rainfall at the critical periods of growth of the several crops considered. Professor Moore fails to correlate these two. Perhaps he may have regarded it as safe to assume that if the annual rainfall follows an eight-year cycle, the same would be true of effective rainfall. Yet while a study of the data for annual rainfall reveals a fairly well marked cycle of eight years with an amplitude of 4.13 (p. 24), the periodograms for effective rainfall (pp. 46, 47, 48, 54) show only a very minor indication of an eight-year cycle (amplitudes, 0.21, 1.71, 0.21, 0.24). There is more indication of a four-year cycle (amplitudes, 1.22, 1.39, 1.22, 0.40). The periodograms give the same impression to the eye. Now, later in the text, when general prices are correlated with crops, a lag of four years is allowed to give time for the crops to show their effect in prices. If the cycle of rainfall is four years and if rainfall is the efficient cause of fluctuation in crops, clearly a lag of four years is meaningless — prices could hardly be one full cycle in advance of their efficient cause.

Still, there might be a mean effective rainfall cycle of longer period than four years, but not necessarily eight, which would account for the high correlation between crops and prices noted later in the text. To investigate for such a cycle the following method was employed. It is confessedly less exhaustive than Professor Moore's method of amplitudes but is believed to be fairly conclusive — at least, sufficiently conclusive to form the basis of a working hypothesis. If a series of numbers be given, then by means of the formula,¹

$$r_{xx} = 1 - \frac{1}{2} \frac{\sigma_y^2}{\sigma_x^2}$$

[σ_y = standard derivation of the differences.]

¹ This formula is given in "A short method of calculating the coefficient of correlation in the case of integral variates." J. A. Harris. *Biometrics*, vol. vii, p. 214.

each number in the series may be correlated with its adjacent, its second, its third, its fourth, etc. If the series conceals a true cycle, it will be revealed by this process. For, suppose the cycle to be one of eight years, then when each number is correlated with its eighth, we shall have a high positive correlation, approaching unity. When each number is correlated with its fourth, the result will be a high negative correlation; with its second and sixth, approximately 0; with its adjacent and seventh, a low positive, and with its third and fifth, a low negative correlation. In other words, if there be a true cycle, the application of this method will reveal a cycle of correlations. If a short cycle were superposed upon a larger one, it might well happen that all the correlations would be positive for the minor cycle. Even then there would be a cycle of these positive correlations with respect to magnitude, as is shown in the case of crops. See footnote.

An application of this method to mean effective rainfall failed to give evidence of an eight-year cycle, but did give some evidence of a seven-year cycle, and possibly also of a cycle of between three and four years. The same method applied to data of yield per acre of nine principal crops gave good evidence of a seven-year cycle, but when applied to prices a well-marked cycle of nine years was revealed.¹ These results were checked by constructing historigrams from the data and observing the intervals between successive maxima and minima. Now it is to be noted that in the case of general prices the correlation of each number with its tenth is nearly as high as with its ninth, and a study of the histori-gram (Fig. 1) reveals points of maxima at 1873, 1883, 1893,

¹ Mean effective rainfall: $r_1 = -0.138$, $r_2 = -0.174$, $r_3 = 0.063$, $r_4 = 0.199$, $r_5 = -0.311$, $r_6 = 0.035$, $r_7 = 0.330$, $r_8 = -0.095$.

Crops: $r_1 = 0.280$, $r_2 = 0.261$, $r_3 = 0.114$, $r_4 = 0.110$, $r_5 = 0.120$, $r_6 = 0.146$, $r_7 = 0.491$, $r_8 = 0.171$.

General prices: $r_1 = 0.600$, $r_2 = 0.380$, $r_3 = -0.260$, $r_4 = -0.525$, $r_5 = -0.310$, $r_6 = -0.330$, $r_7 = -0.034$, $r_8 = 0.201$, $r_9 = 0.401$, $r_{10} = 0.348$.

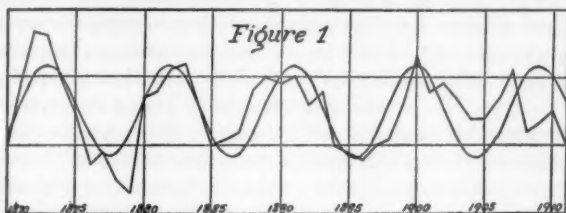
It must be confessed that the figures in the case of mean effective rainfall are very inconclusive. The negative result ($r_1 = -0.138$), when each number is correlated with its adjacent, makes it questionable whether there is any true cycle. The positive correlation ($r_7 = 0.330$), when each number is correlated with its seventh, may be due to mere chance.

and 1907. All of these points are followed by a sharp decline and the dates are those associated with industrial crises. This is certainly suggestive. The other point of maximum is at 1900. There was a crisis in 1903, but here the connection is not so close. The crisis of 1903 appears to have fallen during a decline in prices instead of immediately preceding it. A nine-year periodogram is fitted to the crude data, as shown in the figure. The closeness of the fit is striking.

An apparently strong argument for Professor Moore's theory is found in the high correlation between the yield of crops per acre and general prices, after allowing for a lag of four years. This is surprising, since, from what has been said in the preceding paragraph, the periods appear to be different — one seven years and the other nine or ten years. But an inspection of the historigrams (p. 123) reveals the probable cause of this high correlation. In both cases the minor cycles are superposed upon a larger cycle (possibly Professor Moore's thirty-three year cycle).¹ In the case of crops there is a distinct downward trend from 1870 to about 1892, and from there upward to 1910. In the case of general prices the downward trend extends from 1870 to about 1896 and thence upward to 1910. Hence if a lag of four years be allowed (or even without it), a high correlation would be shown because of these general trends, even if there were no correlation whatever from the minor cycles. I tried the experiment of eliminating these general trends and obtained the following results. Lag of four years, $r = 0.353$; three years, $r = 0.341$; two years, $r = 0.184$; one year, $r = 0.026$. The first of these results, tho much smaller than Professor Moore's ($r = 0.800$), is still striking. The experiment was tried of holding the two historigrams up to a window, one superposed upon the other, and then sliding one upon the other so as to accord with a lag of four years. The crops showed one more complete cycle than the prices in the interval from 1870 to 1910, but, the cycles constructed from the crude data being

¹ Tho in the case of general prices this would be complicated with the effect of changes in the world's gold supply. It would be necessary to apply the method of multiple correlation to eliminate this effect.

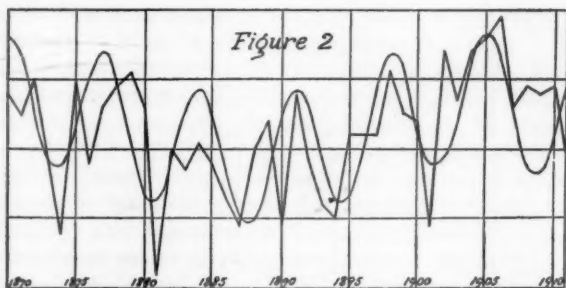
confessedly irregular, there was a rather surprising congruence in some parts of the two histograms.¹ Whether this congruence is to be accounted for by rainfall or by accident can be determined only by data extending over a longer period of time. The histograms referred to in this paragraph, with accompanying periodograms, are shown in Figures 1 and 2. In the case of general prices the trends have been eliminated. In the case of crops they have been accounted for by assuming a thirty-three year cycle.



General Prices: Nine-Year Cycle.

$$\text{Equation; } y = 15.1 + 6.7 \sin \left(\frac{2\pi t}{9} + 330.6^\circ \right).$$

General trends from 1870 and 1910 to 1890 eliminated.



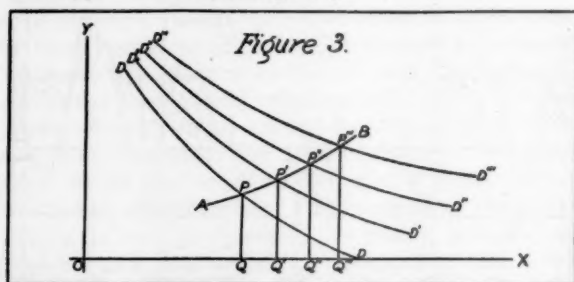
Annual Yield of Nine Crops: Seven and thirty-three Year Cycles.

$$\text{Equation; } y = 102.6 + 4.33 \sin \left(\frac{2\pi t}{33} + 77.3^\circ \right) + 9.34 \sin \left(\frac{2\pi t}{7} + 88.3^\circ \right).$$

¹ This crude visual test is only introduced as suggestive. Needless to say, it falls far short of conclusiveness.

In conclusion of this phase of the subject the suggestion is offered that before any cycles relating to rainfall can be regarded as conclusive, some adequate astronomical or meteorological cause should be adduced.

Professor Moore's studies in demand curves illustrate the principle that the need of checking statistical inductions by abstract reasoning is quite as great as that of verifying abstract reasoning by statistics. The demand curves for crops harmonize perfectly with theory: the conditions of demand remain approximately constant; there is an increased output of crops (very probably due to heavier rainfall); with the diminishing utility due to this increased supply, the marginal utility and hence the price falls. But how about the "new type," the ascending demand curve for pig iron, is it so hopelessly irreconcilable with theory? Not at all. The conditions of demand are changed (very probably by improved business conditions) in the direction of a rapid and continuous increase. This would be indicated, conformably to theory, by shifting the entire demand curve progressively to the right. The ordinates to this shifting curve, corresponding with the lagging supply, will yield Professor Moore's "new type." Thus (see Figure 3):

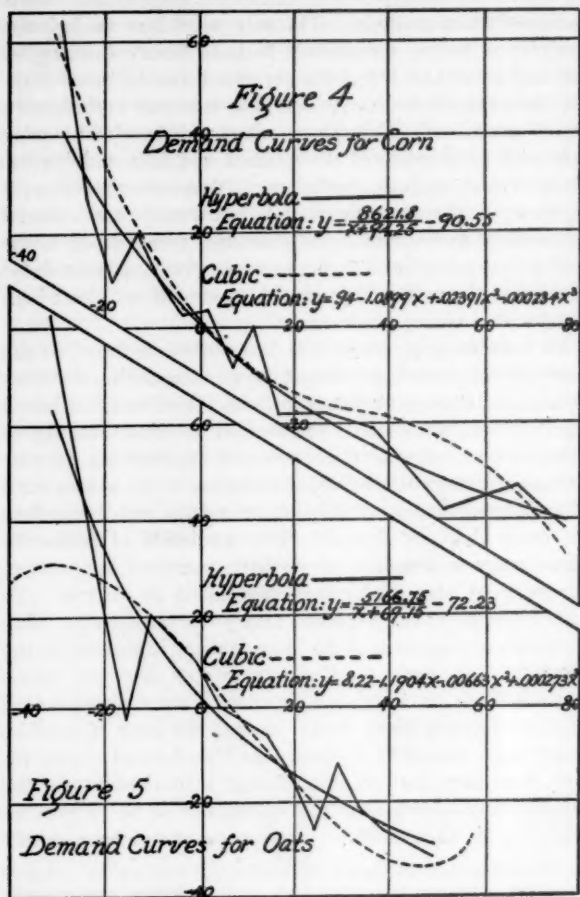


D , D' , D'' , etc., represent the conditions of increasing demand. OQ , OQ' , OQ'' , etc., the corresponding lagging supply. PQ , $P'Q'$, $P''Q''$, etc., the marginal utilities (and hence prices) corresponding with these supplies, and AB the "new type" of demand curve.

The above explanation is essentially that made by Professor Moore himself when he comes to interpret the results of his statistical analysis. The only point here made is the necessity of having a consistent body of theory to interpret just such results as that of the pig iron demand curve. Suppose, for example, we were to accept as universal the inductive law of producers' goods given on page 114. "The price rises with an increase of the product and falls with its decrease"; and suppose, furthermore, that manufacturers of pig iron on the strength of this "universal law" should deliberately double, treble, or quadruple their output in the confident expectation that prices would rise proportionately: I fear that thereafter Professor Moore would not stand high as a prophet among producers of pig iron.

An interesting by-product of the analysis is found in the possibility of predicting prices of the great agricultural staples for any year from estimates as to yield. As already explained the demand curves were constructed by first plotting as abscissas and ordinates the crude data representing the percentage in change in yield and price for each year as compared with the preceding year, and then fitting the best "skew" to the crude data so plotted. The prediction of prices for staple crops is a matter of no little practical importance, especially to large dealers and speculators in futures. To such Professor Moore's method may prove serviceable. May I venture to suggest a slight improvement in respect to the selection of a curve? Professor Moore uses the cubic, $y = a + bx + cx^2 + dx^3$. Now there is no *a priori* reason why the demand curve should assume the form of a cubic. There is no reason to suppose that the demand curves for corn, hay, oats, and potatoes change their elasticity in the curious ways shown near the extremities of the curves on pages 73, 74, 75, and 76.¹ These peculiarities arise simply

¹ Professor Marshall (*Principles of Economics*, p. 161) holds that for "nearly all commodities" the elasticity of demand is greater for the middle range of prices than for prices either very high or very low. This principle might seem to justify the use of a cubic when it takes the form shown in the demand curve for corn (Fig. 4). But it is quite as likely to take the form shown in the demand curve for oats (Fig. 5). This would illustrate a precisely opposite principle, — indeed it shows a condition at its extremities which is obviously absurd.



from the fact that a point of inflection is a property of the cubic. On the other hand there is some slight *a priori* ground for supposing the demand curve to be of the hyperbola type, a curve without points of inflection. In the case of the value of money, it can be demonstrated that the demand curve is the equilateral hyperbola. As Karl Pearson has pointed out, the problem in curve-fitting lies quite as much in the selection of the right type of curve as in the fitting of it to the data when selected.¹ Accordingly the experiment was tried of fitting equilateral hyperbolas to the data for the above mentioned staple crops. The method of moments was employed, the method of least squares being inapplicable. The results obtained in the case of corn and oats are shown in Figures 4 and 5.

In conclusion it is fair to say that Professor Moore's volume is most suggestive and stimulating. Yet it may be questioned whether the main contention of business cycles based upon rainfall is fully proved. As they say in legislative bodies, it would perhaps be best to "refer the whole matter back to the committee for further study."

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¹ "Thus, in fitting an empirical curve to observation it is all important to make a suitable choice of that curve, that is, to determine whether it should be algebraic, exponential, trigonometric, etc." — On Systematic Curve Fitting, Part II. *Biometrika*, vol. II, p. 16.

TWO BIOGRAPHIES OF INVENTORS: DICKINSON'S LIFE OF FULTON AND MORSE'S LETTERS OF MORSE¹

THESE books deserve the attention of economists for the same reason as the life of Edison recently reviewed in these columns.² The biographies of inventors throw light upon the instinct of contrivance, and on the psychological problems connected with it, as well as upon the course of economic development.

There is a curious similarity between the careers of Morse and of Fulton. Both began as painters, and gave promise of at least respectable achievement in the field of art. Both gave up the artist's profession in middle life, and turned deliberately and successfully to the perfecting of mechanical contrivances. Both spent much time in Europe, and there came into contact with distinguished persons of various kinds, evidently making a marked impression on all whom they met. Each is associated with one famous advance in the arts, — Fulton with the steamboat, Morse with the telegraph.

Both biographies contain interesting and novel matter. The neither is the first for its subject, neither fails to add substantially to our knowledge. Mr. Dickinson's *Life of Fulton* is based largely upon documentary evidence, and quotes freely from Fulton's letters and memoranda. On the technical side it seems to be excellently done. Mr. E. S. Morse's *Life of his father* is a larger and in some ways more ambitious book, giving a full picture of a most remarkable personality. The first volume follows that part of Morse's career in which he was a painter, and a painter of distinctly more promise than seems ever to have been the case with Fulton. The second volume deals with his later years, when

¹ H. W. Dickinson, *Robert Fulton, Engineer and Artist; his Life and Works*. London and New York, John Lane, 1913.

Samuel F. B. Morse, *His Letters and Journals*, edited by E. L. Morse, 2 vols. Boston, Houghton Mifflin Co., 1914.

² Vol. xxvi, p. 776 (August, 1912).

he was absorbed in the telegraph. It is difficult to conceive anything more extraordinary than the complete change that took place in his interests and ideals. The refusal of a congressional committee to give him a commission for painting a panel in the rotunda at Washington seems to have completely crushed his ambition as a painter. He turned at once to the development of the telegraph, for which the essential device had long been in his mind. Morse's letters, as published in these volumes, give accounts of his European experiences as a painter, and of similar experiences in later life when the telegraph had made him famous. They are interesting quite apart from the aspects which concern the economist.

Fulton shows all the characteristics of the born inventor. Tho not fairly bubbling over with new contrivances, like Watt, Cartwright, Ericsson, and Edison, he gave attention to a number of inventions and experimented all his life with one or another of them. As a young man he went to England, and there tried to establish his position and earn his living as a painter. But he was interested at the same time in the crowd of schemes and experiments then in vogue in England as well as in the United States. This was the era of canals, and Fulton elaborated a scheme for small canals, with inclined planes, by means of which light canal boats were to be hauled from one level to another; a substitute for locks which illustrates the fertility as well as the impracticability of so much scheming among inventors. He devised an early panorama, which proved profitable in Paris and for some time was his main source of support. He was enthusiastic about a submarine boat, in which he succeeded in enlisting for a while Napoleon's interest. The craft was entirely unmanageable with the motive powers then known, and Napoleon was shrewd enough to let it go after a little examination. Nevertheless, Fulton succeeded so far in frightening the British Admiralty about its possibilities that he was bought off for a handsome sum, and so was enabled to make his way to the United States. After his return to his native country, he gave his attention almost solely to the

steamboat, for which he had already formed the well-known partnership with Livingston. It deserves to be remembered that while in England he saw much of the indefatigable Cartwright, and doubtless got much stimulus from that prolific person.

It is clear that the instinct of contrivance was strong in Fulton. But he was far from indifferent to pecuniary considerations. He bargained most persistently with the French and the British about his submarine and his torpedoes. He labored assiduously to get a steamboat monopoly on the Hudson for his partnership, and to get similar exclusive privileges on the lower Mississippi and on the Neva (from Petersburg to Kronstadt). Apparently he dropped painting because there was little prospect of good remuneration from it; his work had been chiefly upon portraits and miniatures. His biographer remarks that "it cannot be denied that he never neglected an opportunity for profiting pecuniarily by his inventions." There was doubtless some unconscious inversion of emphasis when he wrote to his friend Joel Barlow about the steamboat, "Although the prospect of personal emolument has been some inducement to me, yet I feel infinitely more pleasure in reflecting on the immense advantage that my country will draw from the invention."

Morse showed in the early part of his career less evidence of the contriving bent than Fulton. Indeed, in this biography little is said of the evidences of mechanical talent and interest during the first period of his life. More material on this aspect of his career is to be found in previous biographies, and more particularly in that of Prime. It was natural enough that among the devices to which he gave attention as a young man was a machine for reproducing statuary. A piece of mechanism for the same purpose, it may be noted by the way, had also long engaged the interest of a more celebrated inventor, James Watt; like other devices, it was experimented with at least a century before being brought into serviceable shape. Morse was also keenly interested in Daguerre's invention. He corresponded with Daguerre, first suggested the possibility of taking photographs of living persons, and for

a while supplemented his income by making such photographs for profit. Nevertheless, it remained true that painting absorbed his interest during his earlier career, and that in later life the one invention to which he gave assiduous attention was the telegraph. The plan for a dot and dash alphabet seems to have flashed across him during the voyage across the Atlantic on the *Sully*. It was years, however, before he turned to its detailed development, — a consequence, as already noted, of the crushing disappointment of 1837. His enthusiasm for art seems to have ceased with extraordinary suddenness when the congressional committee in that year refused to give him the commission for painting the Rotunda panel. Thereafter for many years he labored with a pertinacity that was almost monomaniac on the elaboration of the telegraphic device.

Morse was an unusual person in every way. He had wide interests and an impressive and attractive personality, but also eccentricity and an unmanageable temper. He was almost always in hot water, carrying on vehement controversies with all sorts of people, and too often quarreling with his associates. Characteristics of this sort appear commonly enough in the make-up of persons who have the creative temperament. His son, who edits this biography with frankness as well as with filial devotion, admits that there was much to deplore in what was said and written by the father. Morse had strong religious faith of the orthodox sort, and believed himself an instrument in the hands of the Deity for achieving great results. It was no doubt a manifestation of this sort of religious faith that he had an extraordinary fear of the Roman Catholics, and honestly believed in the existence of a Roman Catholic plot for getting control of the United States. This same religious belief explains his attitude toward slavery. One who read the Old Testament with the sort of faith that Morse had might easily believe that slavery was a social condition ordained by divine wisdom for certain communities, and not at all a sin; which in turn explains why he was lukewarm for the North during the civil war, and might be described as a copperhead. In perfecting the telegraph he felt, with un-

questionable sincerity, that he was doing a great work for the glory of God. It gave him vast satisfaction that the first passage which was flashed across the wires was a phrase from the Old Testament: "What hath God wrought!" He wrote to his brother, "That sentence was divinely indited."

It is not at all inconsistent with a temperament of this sort that he should also have a keen eye for the main chance. It seems tolerably certain in his case that the instinct of contrivance did not operate spontaneously. It was stimulated, if not evoked, by the prospect of gain. Morse turned frankly from painting to inventing as a means of providing for his family and securing a competence or fortune. Those who believe that the instinct of contrivance would work out the same results in the absence of a patent system or other provision for reward will find little confirmation in his career. Probably a similar conclusion would be indicated by the careers of others who, like himself, belong not in the very first rank among inventors, but in the respectable second rank. An extremely small number of persons have the contriving instinct with great intensity. A very much larger number possess it in some degree, but are not irresistibly impelled by it. Whatever be the case with those of contriving genius, the inventors who have only high talent seem to need the spur of reward.

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NOTES AND MEMORANDA

THE ECONOMIC SYNTHESIS: A REPLY

IN view of the importance and authority of the *Quarterly Journal*, I cannot let pass without a reply the review of my *Economic Synthesis* by Professor Clive Day, published in the February issue. I would not lay stress on the unnecessarily aggressive temper of the review, nor show the inconsistencies between the opinions of my critic and those of the many scholars who have judged the book differently, or even the inconsistencies in his own opinions, — the latter perhaps would be easier. In truth, there seems to be an inconsistency in writing so many pages, some of them no doubt suggestive, about a book which at the very outset is declared to be not worth reading.

I write these lines simply to protest with all my power against a literalness of exegesis which perhaps would be admissible as regards the Bible and the Koran, but which is quite out of place in discussing a work of science. Professor Day brings together all the pages in my book in which the word "subsistence" appears, and discovers that what I say in one place is not absolutely in accord with what I say in another. Why, instead of merely scanning minutely the words, like a glossarist of the Middle Ages, has he not considered the ideas? Had he done so, he would have seen that there is not a shadow of inconsistency in my exposition. What I say comes in substance to this. Subsistence is equal to the product of isolated labor, supplied with the necessary technical capital; whereas this same labor, as soon as it is associated, produces something in addition, which is *revenue*. Subsistence certainly is not luxury, not even comfort. It

coincides essentially with the necessities of the worker. But it has nevertheless to be understood, and I have taken care to repeat it many times, that these necessities, which are rather moral than physical, by no means coincide with the minimum indispensable for life. They are not the same as starvation wages, which they may readily surpass. Hence there is no inconsistency on my part if I admit that the capitalist does his utmost to lower wages below the normal level fixed by subsistence, and that the laborer in turn endeavors to bring wages back to this level. This is the basis of the contest between capital and labor. In the same way there is no inconsistency if I admit the possibility that the laborer may save a part of the wages or of the subsistence which he gets, even tho at the cost of severe privation.

I must also protest against the way in which my critic has stated some of my propositions. For example, according to him, I have said that "the quantity of incomes produced in a nation is determined by the quantity of capital productively employed, by the quantity and productivity of the land, by the quantity of public and private securities issued." Stated in this way, my proposition, I admit, would be an absurdity. But the passage referred to says nothing at all about the determination of total income; it bears exclusively on the classification of the different kinds of income, and says precisely this: "The quantity of the various consolidated and fluctuating incomes produced in each nation is determined by the quantity of capital productively employed," and so on (p. 154). This is an incontestable truth. Evidently for instance, the total volume of interest or dividends on public securities in a nation is the precise result of the amount of the public debt which has been issued.

Like every student of economic history, I know the various theories about the origin of the ancient agrarian community. I am well aware that the aristocratic theory of Kemble, Fustel de Coulanges, Seebohm, is in opposition to the democratic theory of Maurer, Vinogradoff, and others. I am well aware also that this controversy (which at bottom is a repetition of that carried on in the eighteenth century between

Boulainvilliers and Dubos) can be the occasion of much interesting discussion, as indeed I have indicated. But all this has nothing to do with the particular subject of my book, which is not concerned with any analysis of the political or legal aspects of the primitive community or with its free or servile origin. The book simply considers the technical and economic structure of the community, the processes of production and distribution as regards the productive agents and the product. Now, on this subject the theorizers of the two opposing schools are entirely in agreement. It suffices to compare the remarks of Seebohm (*The English Village Community*, 3d ed., London, 1884, pp. 123, 226, etc.) with those of Vinogradoff (*The Growth of the Manor*, London, 1905, pp. 165, 183; *English Society in the Eleventh Century*, London, 1908, pp. 216, etc.) on the organization of production and distribution in the English agrarian community. The comparison shows that these two authorities give an absolutely identical picture of the economic form, and that they represent it as a coercive association of labor organized by a central authority which endeavors to maintain substantially equal partition among the associates. This is all that I wish to bring out.

Professor Day makes the following criticism, "In Loria's mind there is no history, but only political economy stretching back over countless centuries of time." No less a person than Ricardo has been criticized in these identical words, and it might be considered a high honor for me to deserve it. But have I really deserved it? I think not. I have never believed that the economic phenomena analyzed by me are the whole of history, that they comprise the whole of humanity. Far from it; I should be the first to admit that these facts would present only one aspect, more or less fragmentary, in the general history of the species. Yet, admitting all this, one cannot doubt the enormous importance of these phenomena or their great historical significance. For example, it would certainly be absurd to believe that the efforts of the slaves and serfs to buy their liberty comprise the entire history of the periods in which these phenomena are found,

or even that they comprise everything that can be said on the evolution and decay of slavery and serfdom. But no penetrating thinker can doubt that this is an economic phenomenon of fundamental importance. The fact that the slave and serf employed his money, as soon as it had reached the requisite amount, for buying his liberty, which opened to him access to landed property, was far from being "a creation of my imagination of which I could give no proof"; it was formally embodied in legislation. It suffices to cite the rescript of Marcus Aurelius and of Severus about *servus suis nummis emptus*, where the manner and the effect of the purchase of the slaves by himself are carefully regulated (Buckland, *The Roman Law of Slavery*, Cambridge, 1908, pp. 606 *et seq.*). Now the effort was always made to counteract the slave's endeavor to buy himself by raising the price in such way that it should exceed somewhat the amount of his savings. And hence it is that the price of slaves, as has been well said by one of your own economists, Mr. Philipps, is the central fact in slavery. If Professor Day prefers to hold a different opinion, if he finds this analysis simply grotesque, I have nothing more to say.

According to my investigations, so long as the isolated laborer produces all his subsistence, he never associates his labor with that of another, and in consequence the association of labor takes place by compulsion, — either through the compulsion of a collective authority, as in the ancient communities or despotisms, or through that of a private capitalist, as in the case of a bonanza farm. But it follows also that if the isolated laborer does not succeed in producing his entire subsistence, his opposition to the association of labor ceases, and the association becomes spontaneous. This conclusion, which Professor Day calls nonsense, is simply the logical outcome of premises established with precision.

I might add that my critic, notwithstanding the exuberance of his detailed remarks, finds not a word to say about my chapter upon the rational imposition of taxes, or on my studies concerning the distribution of revenue, the contest between the different revenues, the pyramidal distribution of

funded incomes which results from this struggle, — all subjects which form the essence and core of my book. I merely note these topics in order to enable your readers to judge for themselves the solidity and impartiality of my critic.

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DEPRECIATION AND RATE CONTROL A QUESTION OF JUSTICE

PROFESSOR Allyn A. Young's recent heretical utterances on depreciation in the valuation of public service properties for the purpose of rate control, compel every true believer to gird on his armor and come forth in defense of the faith.¹ Professor Young's ideas are dangerous and his arguments are plausible; so all the more zeal for their destruction! So long as they had been advanced only by engineers and public utility experts employed by the corporations, or perhaps even by Mr. James E. Allison and the St. Louis Public Service Commission, there was no need for serious alarm. But when they are taken up by Professor Young, a vigorous thinker and a progressive economist of high standing, then indeed it is time to rush for the defense of righteous belief.

Professor Young's principal thesis is that when a public utility is newly brought under regulation and its property is valued for the purpose of rate control, to deduct accrued depreciation from cost new would be unjust to the investors. The rates to be fixed in any case will presumably be just so high that the revenues will cover operating expenses and bring a reasonable return upon the valuation. Professor Young assumes that in the great majority of instances, a public service company, before it was brought under active

¹ "Depreciation and Rate Control," *Quarterly Journal of Economics*, vol. xxviii, pp. 630-663, August, 1914.

regulation, did not include in operating expenses provisions for accruing depreciation and therefore did not build up a depreciation reserve; that instead it maintained the efficiency of the plant by charging to operating expenses the cost of replacements, and calculated its annual profits accordingly; that it had made its investments with the expectation that returns were to be received upon the full money outlay in the business, and had not made excessive gains from the property. If under such circumstances, the newly prescribed accounting standards require current depreciation to be included in operating expenses, and if the valuation upon which a return is allowed be cost new less past accrued depreciation, Professor Young urges that the company would not get the return the expectation of which induced the investment, and would therefore be treated unfairly by regulation.

Most economists and students of public utility matters probably do not agree with Professor Young's position. The danger, however, in formulating an adequate criticism against his view is to base one's argument upon pure scientific grounds, as if the matter involved fundamental principles of economics and accounting. This, it seems to me, is the difficulty with the recent criticism presented by Mr. Joseph S. Davis, in his otherwise very excellent discussion.¹ Professor Young does not base his conclusion on accounting principles, but on principles of justice or sound public policy, — which, incidentally, is also the basis for all public regulation, including valuation and the fixing of rates. When Mr. Davis, therefore, considers accrued depreciation as that part of the original value of the property which has been consumed in service, and presents it as an economic fact *which is*, whether shown in the accounts or not, he misses, it seems to me, the essential point in public utility valuation. Professor Young seems quite right when he urges that we have not to do with value as such but with *value for the purpose of rate regulation*. The one belongs in the realm of general economic law, but the other is wholly a thing of public policy.

¹ "Depreciation and Rate Control: A Criticism," *Quarterly Journal of Economics*, vol. xxix, pp. 362-378, February, 1915.

Mr. Davis appears to be entirely wrong when he insists that a public service corporation is rightly entitled to a return upon the *value* of its property, measured according to its productive power, shown in the accounts as cost less accrued depreciation. Not even in unregulated business can it be claimed correctly that the value of a property is equal to its cost less accrued depreciation (when the latter is based upon the cost and expected life of the different classes of property), unless special adjustments are made for the value of earning power greater or less than normal. The value of an industrial property is, of course, determined by earning power, or productive power (to use Mr. Davis' phrase), and not by cost, as Mr. Davis' argument seems to imply. But in regulated business, we are not seeking the value of a property but a fair valuation for the purpose of control. It is true, the courts in the consideration of rate cases have quite consistently held that it is the "value" of its property upon which a company has a constitutional right to earn a reasonable return; still, practically they have allowed valuations to be made for the most part on the cost of reproduction basis, with due allowance for accrued depreciation. This, it should be emphasized, is not value in the sense used by Mr. Davis, but value for rate regulation as considered by Professor Young. It should be clear that if economic or market value were to be taken as the basis of rates, regulation would be useless, for it would get nowhere. Value would be dependent upon earning power, which would depend upon the rates to be fixed,—the familiar circle.

Actually, however, whatever the language of the courts may be, it is not value but cost which has become the accepted basis of rate regulation, and the proper basis of valuation, let us repeat, is not a matter of economic law, but one entirely of public policy. And in deciding upon the best policy we may very well consider actual cost as against cost of reproduction, or in either case whether the cost should be new or with deduction for accrued depreciation, or even with deductions for other matters. The decision must rest upon broad expediency, which, of course, involves questions of

justice as between the immediate owners and the public, for whose welfare the property is to be operated.¹

What we wish, it seems, is such a policy of valuation for rate control as will serve best or promote most the general welfare. It is not to be doubted that Professor Young admits regulation itself to be desirable. If a given policy in *general* promises to serve the public interest best, it should not be set aside merely because some individuals or relatively small classes are likely to suffer some injury or inconvenience. Regulation apart from the question of valuation, in so far as it has hampered opportunity for personal gains, has unquestionably brought losses to special classes; but surely it cannot be considered socially unjust for that reason, so long as it has really promoted the welfare of the country at large. And the question of valuation should be viewed in exactly the same way. Still, we should avoid so far as possible any serious individual injury or loss.

From the broad view just presented, it seems that Professor Young has disregarded several important considerations, which, if given proper weight, might easily have led him to a different conclusion than that he has presented. Possibly Professor Young may not agree at all as to the best policy with the almost universal practice in providing for complete maintenance of public service properties. The present almost universal practice is to require the inclusion in operating expenses of charges for so-called current depreciation, in addition to the cost of all minor replacements. Then as major replacements are made, they are charged to the property accounts, and the depreciation reserve is debited with the original cost of all property retired. Apparently in the case of large and varied properties at least, Professor Young would prefer a somewhat different procedure. Instead of providing currently for accruing depreciation, he would charge to operating expenses the cost of all replacements as they are made, thus avoiding what he terms a useless reserve. I do not consider that there is here a great economic principle at

¹ A friend, Mr. P. W. Saxton, suggests quite rightly that the proper method of valuation involves also a question of justice between the present generation of utility users and following generations.

stake; we are dealing merely with desirable operating practice, and I believe that the prevailing methods are for the most part sound.¹ Professor Young, however, appears not to object especially to making provision for complete maintenance through depreciation charges, and in so far as such charges have been made he seems not to object in valuation to deducting accrued depreciation from the cost new of the property.

Suppose, then, we decide for the future to make depreciation charges, with the general idea of including in rates a reasonable return upon the cost of the property with deduction for accrued depreciation. Professor Young, then, apparently admits that this basis of valuation would not be unjust and that perhaps it may be the most desirable in reference to depreciation accrued and charged to operating expenses after the new policy was established. But he would consider it unjust in so far as it were to apply to depreciation accrued before regulation was begun. But if the general policy for the future is desirable, then Professor Young should consider the practical difficulty of determining in any appraisal with even rough accuracy between depreciation accrued before regulation was established and that accrued during the period of regulation, — the latter to be deducted from cost and the former not. If in general, for the future, cost less accrued depreciation is the desirable basis of valuation, then the injustice that would be wrought upon investors by following the method throughout, should be very clear and really serious, before we attempt the tremendous difficulty of determining in any case the depreciation accrued prior and that accrued subsequently to any particular time.

¹ Undoubtedly the operating efficiency of a property would be maintained equally well whether depreciation or the cost of replacements were charged to operating expenses. The principal objection to the second method is that complete maintenance charges would be irregular from year to year, probably even in the case of a very large and varied property. A second objection is, it would be difficult in many cases to distinguish between additions or betterments, which would be chargeable to the property accounts, and replacements, which should go to operating expenses. Of course, all installations might be charged to the property accounts, including in operating expenses the original cost of property retired. This procedure, however, would probably increase the irregularity of operating charges. It is doubtless chiefly on account of these difficulties that the prevailing practice has become established.

If the method in general is satisfactory, the special desirability of departing from it in any way should be shown beyond much possibility of doubt. This, it seems to me, Professor Young has not shown.

Let us assume that the *general* method of valuation followed by the commissions is desirable, and that on account of the difficulties involved, no departure should be made from it unless fairly serious injustice would be brought upon special classes in society. In this connection it is worth while to point out several important facts which Professor Young passed over with slight, or without any consideration. In the first place, we must remember that before regulation was actively begun, public utilities had no regard for costs in fixing rates or prices for their services. They charged what the traffic would bear, making in each case all the profit that they could. True, on the average they were probably not excessively profitable; but nevertheless, they took all they could, and in no case of inadequate returns would the profits probably have been less under regulation. Some properties were undoubtedly profitable beyond reason, the average probably made just reasonable returns, and some certainly did not justify their investment, but nevertheless had a free chance to do so. Where, then, is the clear injustice if in valuation throughout we deduct for all past accrued depreciation?

Since the time of the so-called Granger cases it has been undoubted law that public utilities were invested with a public interest and subject to rate regulation. Every investment has been made subject to this public right. If for a long time the right was not definitely formulated into a policy, it nevertheless existed, and the investors have known that it was there. Have they suffered by the non-use? If now, therefore, we definitely formulate the right and enforce it, who is seriously injured? Certainly the investors in the highly profitable or even in the average properties have no cause for complaint, for we might have regulated them sooner. The others had a free chance to get all the profit that they could, and for the future they will still have the opportunity, if the business will permit it, to charge such rates as to bring

reasonable returns upon their investment as defined by accepted valuation standards. If they were not profitable in the past, they may not be so in the future, but they will still have the opportunity of obtaining fair profits, and will probably be better guarded from competition. Where, then, is the serious injustice?

Actual valuation policy, in so far as it has been worked out, is based upon cost of reproduction and not the actual cost of the property, much less the cost to the corporation. If long ago actual cost had been made the basis of valuation, investors would have had no ground for objection; the basing of returns upon actual investment would then be fair enough. Now, however, we base the valuation upon the cost of reproduction, which in view of the high level of present prices, results in most cases in a valuation appreciably greater than actual investment. In the case of old properties, where the apparent injustice which Professor Young urges would be the greater, the excess of reproduction cost over actual investment is also the greater, — for the most part probably fully or more than offsetting accrued depreciation.¹ Should this point not be considered pretty thoroly before we make an exception to an otherwise desirable method of valuation?

Professor Young has curiously passed over a point in current practice, which, it seems to me, disposes of any doubt in the question before us. He makes no reference to so-called *going-value*, which is allowed in a physical appraisal by most of the state commissions and seems to be required by the courts.² While *going-value* has not been definitely and authoritatively defined, it covers for the most part early developmental expenses incurred by a company, operating deficits, and deficiencies in reasonable return upon investment. Thus, the official valuation in any case is the cost of the prop-

¹ Since 1897, general prices have advanced fully fifty per cent, and land used for utility purposes usually several hundred per cent, while even in the case of a very old and stationary property, the extreme accrued depreciation over actual cost cannot be over fifty per cent. The term actual investment means the money cost of a property at the time of installation of the several parts.

² See Kings County Lighting Case, 210 N. Y. 479.

erty, less accrued depreciation, plus going-value. If a company from the first has obtained a reasonable return upon its investment, that is all that it was entitled to receive and for the future it will be treated fairly enough if it may get a return upon the cost of the property less accrued depreciation. But, if it has not been reasonably profitable, the deficiencies may be capitalized and added as going-value to the physical valuation of cost less accrued depreciation. With going-value or past unprofitableness thus provided for, where is the injustice upon which Professor Young so forcefully insists?

As a matter of fact, considering the policy of valuation as it now stands, with cost of reproduction and allowance for going-value, are we not rather more than just to the investors? Would the ordinary sense of justice be especially outraged if accepted valuation did not allow the capitalization of operating deficits and deficiencies in return, or were to include only actual cost less depreciation? But we include even land or other property granted free to corporations by federal, state, or municipal governments; we often allow items for which no costs were incurred by the investors, and in some cases there appears an inclination even to allow the capitalization of franchises on the basis of earnings, — thus promising to shut off all possibilities of rate reduction.¹ If going-value is to be allowed in case of deficiency in past returns when the company has fixed prices with regard only to maximum profits, may we not suggest that a corresponding deduction from the physical valuation might be made when excessive returns have been realized? While there have been some judicial dicta in line with this suggestion, the idea has never been seriously advanced. But, if justice to investors really demands an addition to physical valuation for past deficiencies in return, is it not reasonable to ask whether justice to the public would not require a reduction for excessive actual returns? If investors are entitled to a fair return on their

¹ See the *Patterson Gas Case*, *Public Service Gas Co. v. Board of Public Utility Commissioners*, New Jersey Court of Errors and Appeals, November Term, 1913, decided December 10, 1914. — It is stated that a rehearing is to be held on this case.

investment and no more, and if deficient returns shall be added to the investment, then why should not excessive returns be deducted from the investment?

I do not wish to support the suggestion just made, but it has nevertheless a place in the consideration whether present valuation practice is unjust to investors. Much may be urged in criticism of existing valuation practice; but in view of the above considerations, Professor Young had an exceedingly difficult task in making out a case of injustice to investors. Has he succeeded?

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BOOKS RECEIVED

- Andréadés, A. *Financial Administration of the Nations in the Ionian Islands*. 2 vols. Athens: Hestia. 1914. pp. 415, 350. (In Greek, with a French preface and table of contents. The period chiefly covered is the 17th and 18th centuries.)
- Argentine Republic, Buenos Aires. *Year-Book of the City of Buenos Aires*, 1913. Buenos Aires: Government. 1915. pp. 327.
- Argentina, Ministerio de Agricultura. *Censo Comercial e Industrial de la República*, Boletín No. 20. Buenos Aires: Ministerio de Agricultura. 1915. pp. 84.
- Babcock, K. C. *The Scandinavian Element in the United States*. Urbana: University of Illinois. 1915. pp. 223. \$1.15. (University of Illinois Studies in the Social Sciences.)
- Barron, C. W. *The Audacious War*. Boston: Houghton Mifflin Co. 1915. pp. 192. \$1.00.
- Beard, Mary R. *Woman's Work in Municipalities*. New York: D. Appleton & Co. 1915. pp. 344. \$1.50.
- Böhm-Bawerk, Eugen von. *Kapital und Kapitalzinsen, Erste Abteilung: Geschichte und Kritik der Kapitalzinstheorien*. Innsbruck: Wagner. 1915. pp. 747. M. 18. (Third edition, revised; thus completing the 3d edition of the entire work.)
- Bennett, W. P. *The History and Present Position of the Bill of Lading*. Cambridge, Eng.: University Press. 1915. pp. 101. 4s.
- Cartwright, O. G., and Anthony, Katharine. *The Middle West Side. Mothers Who Must Earn*. New York: Survey Associates. 1915. pp. 67, 223. \$2.00. (Russell Sage Foundation, West Side Studies, carried on under the direction of Pauline Goldmark.)
- Carver, T. N. *Essays in Social Justice*. Cambridge: Harvard University Press. 1915. pp. 429. \$2.00.
- Casualty Actuarial & Statistical Society of America. *Proceedings of the Inaugural Meeting*. Lancaster, Pa.: New Era Printing Co. 1915. pp. 76.
- Clarke, A. G. *A Text-Book on National Economy*. London: P. S. King & Son. 1915. pp. 105. 3s. 6d.
- Cole, W. M. *Accounts: Their Construction and Interpretation*. Boston: Houghton Mifflin Co. 1915. pp. 445. \$2.25. (Revised and enlarged edition.)
- De Witt, B. P. *The Progressive Movement. A Non-partisan, Comprehensive Discussion of Current Tendencies in American Politics*. New York: Macmillan. 1915. pp. 376. \$1.50. (In *Citizen's Library of Economics, Politics and Sociology*.) #:
- Doraiswami, S. V. *Indian Finance, Currency and Banking*. Madras: S. V. Doraiswami. 1915. pp. 176, lxxxii. Rs. 2/8.
- Drum, John S. *Brief: Reciting the Facts which sustain the Position of the Banks of California with Respect to the Proposed Increase in the Rate of State Taxation*. Legislative Committee of the California Bankers' Association. 1915. pp. 20.

- Eldridge, Seba. *Problems of Community Life: An Outline of Applied Sociology.* New York: Thomas Y. Crowell. 1915. pp. 180. \$1.00.
- Ellwood, C. A. *The Social Problem.* New York: Macmillan. 1915. pp. 255. \$1.25.
- England, Board of Trade. *Seventeenth Abstract of Labour Statistics.* London: Government Printing Office. 1915. pp. 348. 1s. 6d.
- Gehlke, C. E. *Emile Durkheim's Contributions to Sociological Theory.* New York: Longmans, Green & Co. 1915. pp. 188. \$1.50. (Columbia University Studies, Vol. LXIII, No. 1.)
- Gould, C. P. *Money and Transportation in Maryland, 1720-1765.* Baltimore: Johns Hopkins Press. 1915. pp. 176. (Johns Hopkins University Studies.)
- Harris, R. S. *Practical Banking, with a Survey of the Federal Reserve Act.* Boston: Houghton Mifflin Co. 1915. pp. 309. \$1.75.
- Haworth, P. L. *America in Ferment.* Indianapolis: Bobbs-Merrill. 1915. pp. 477.
- Holt, L. H. *An Introduction to the Study of Government.* New York: Macmillan. 1915. pp. 388. \$2.00.
- Hooper, W. E. *Railroad Accounting.* New York: Appleton. 1915. pp. 461. \$2.00.
- Hutchinson, Lincoln. *The Panama Canal and International Trade Competition.* New York: Macmillan. 1915. pp. 283. \$1.75.
- Italy, Institut International d'Agriculture. *Annuaire International de Statistique Agricole, 1911 et 1912.* Rome: L'Institut International d'Agriculture. 1915. pp. 622. 5 frs.
- Kellor, F. A. *Out of Work: A Study of Unemployment.* New York: G. P. Putnam's Sons. 1915. pp. 569. \$1.50.
- King, C. L. *Lower Living Costs in Cities: A Constructive Program for Urban Efficiency.* New York: D. Appleton & Co. 1915. pp. 355. \$1.50.
- Lippincott, Isaac. *A History of Manufactures in the Ohio Valley to the Year 1860.* New York: Knickerbocker Press. 1915. pp. 214.
- McFarlane, John. *Economic Geography.* New York: Macmillan. 1915. pp. 560. \$2.25.
- National Tax Association. *Proceedings of the Eighth Annual Conference.* Madison: National Tax Association. 1915. pp. 499.
- Rappard, W. E. *La Révolution industrielle et les origines de la protection légale du travail en Suisse.* Berne: Staempfli & Cie. 1915. pp. 343. 8.75 fr.
- Reed, Susan Martha. *Church and State in Massachusetts 1691-1740.* Urbana: University of Illinois. 1915. pp. 208. \$1.05.
- Ricci, Umberto. *Les bases théoriques de la statistique agricole internationale.* Rome: L'Institut International d'Agriculture. 1915. pp. 314. 5 fr.
- Rohrbach, Paul. *German World Policies.* New York: Macmillan. 1915. pp. 243. \$1.25. (Translated by Edmund von Mach.)
- Rose, J. H. *The Origins of the War.* Cambridge, Eng.: The University Press. 1915. pp. 201. \$1.00. (Lectures delivered at Cambridge, 1914.)
- Scott, J. F. *Historical Essays on Apprenticeship and Vocational Education.* Ann Arbor: Ann Arbor Press. 1915. pp. 96.
- Segre, Arturo. *Manuale di Storia del Commercio, Vol. 2: Dalla Rivoluzione Francese ai giorni nostri, 1789-1913.* Torino: S. Lattes & C. 1915. pp. 513.
- Smithsonian Institution. *Annual Report for 1913.* Washington: Government Printing Office. 1915. pp. 804.

- Suffern, A. E. Conciliation and Arbitration in the Coal Industry of America. Boston: Houghton, Mifflin Co. 1915. pp. 376. \$2.00. (Hart, Schaffner and Marx Prize Essays in Economics.)
- Tangorra, Vincenzo. Trattato di Scienza della Finanza, Vol. I. Milan: Società Editrice Libraria. 1915. pp. 884. L. 20.
- Tennessee, Committee to Investigate Assessment and Taxation. Report. Nashville: McQuiddy Printing Co. 1915. pp. 108.
- True, Ruth S. Boyhood and Lawlessness. The Neglected Girl. New York: Survey Associates. 1915. pp. 215, 143. \$2.00. (Russell Sage Foundation, West Side Studies, carried on under the direction of Pauline Goldmark.)
- U. S. Department of Labor. Government Aid to Home Owning and Housing of Working People in Foreign Countries. Washington: Government Printing Office. 1915. pp. 451. (Miscellaneous Series No. 5.)
- Uruguay, Director General de Estadística. Anuario Estadístico, 1909-10, Libro XXII, Tomo II. Montevideo: Juan J. Dornaleche. 1915. pp. 449.
- Wagel, S. R. Finance in China. Shanghai: North China Daily News and Herald. 1915. pp. 503.
- Wheeler, H. D. Are We Ready? Boston: Houghton Mifflin Co. 1915. pp. 228. \$1.50.
- Wickware, Francis G. (Editor). The American Year Book, 1914. New York: Appleton. 1915. pp. 862.
- Women's Educational and Industrial Union. The Public Schools and Women in Office Service. Boston: Women's Educational and Industrial Union. 1915. pp. 187. 80c. (Studies in Economic Relations of Women, Vol. VIII.)

